TRAFFIC AND TRANSPORTATION

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SUMMARY OF CONCLUSIONS

This section of the Final Staff Assessment (FSA) analyzes the potential effects on traffic and transportation that would occur from the construction and operation of the proposed Hidden Hills Solar Electric Generating System Project (referred to as HHSEGS or proposed project). California Energy Commission staff has analyzed the traffic-related information provided in the Application for Certification (AFC) and acquired from other sources to determine the potential for the Hidden Hills Solar Electric Generating System Project to have significant adverse traffic and transportation-related impacts. Staff has also assessed the availability of mitigation measures that could reduce or eliminate the significance of these impacts.

On October 1, 2012, Hidden Hills Solar I, LLC and Hidden Hills Solar II, LLC submitted an Updated Workforce Analysis identifying new commute assumptions; a new peak month; an increase of the peak construction workforce and an increase in the construction workforce traffic that would utilize State Route 127 within both Inyo County and San Bernardino County, California. Staff has incorporated the revised data and proposes revised conditions of certification.

As currently proposed, construction and operation of the Hidden Hills Solar Electric Generating System Project has the potential to cause significant impacts to ground traffic and aviation. Energy Commission staff proposes Conditions of Certification **TRANS-1** through **TRANS-8** to reduce these impacts to less than significant and to ensure that the proposed project would comply with all applicable laws, ordinances, regulations, and standards pertaining to traffic and transportation. Staff concludes that with implementation of proposed Conditions of Certification **TRANS-1** through **TRANS-8**, the proposed project would not cause significant impacts to traffic and transportation. Staff concludes that glint and glare effects from a traffic and transportation perspective would be less than significant with implementation of staff's proposed Condition of Certification **TRANS-8.**

INTRODUCTION

In compliance with the California Environmental Quality Act (CEQA) and Energy Commission requirements, this traffic and transportation analysis identifies the HHSEGS's potential impacts to the surrounding transportation systems and proposed conditions of certification that would avoid or lessen these impacts. It also addresses the project's consistency with applicable federal, state, and local transportation-related laws, ordinances, regulations, and standards (LORS).

The proposed project is located in Inyo County, California, along the California-Nevada border. The transmission and natural gas pipeline alignments would be located in the State of Nevada, primarily on federal land managed by the U.S. Bureau of Land Management (BLM), except for small segments of the transmission lines for both options in the vicinity of the Eldorado Substation, which would be located within Boulder

City, Nevada. Because the proposed facilities would be located on public land managed by BLM, the Valley Electric Association Hidden Hills Transmission Project (VEAHHTP) is considered a federal action requiring review under and compliance with the National Environmental Policy Act (NEPA).

A Draft Environmental Impact Statement (DEIS) of the transmission and natural gas pipeline alignments will be prepared by BLM. [1]Therefore, staff has not addressed the direct impacts of the project's transmission line and natural gas pipeline on transportation systems within the State of Nevada.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Traffic and Transportation Table 1 provides a general description of adopted federal, state, and local LORS pertaining to traffic and transportation that apply to this project.

TRAFFIC AND TRANSPORTATION Table 1
Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
Federal	
Code of Federal Regulations (CFR) Title 14, Aeronautics and Space, Part 77 – Objects Affecting Navigable Airspace 77.13	This regulation requires the project owner to notify the Federal Aviation Administration (FAA) of construction structures with a height greater than 200 feet from grade or greater than an imaginary surface extending outward and upward at a slope of 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of an airport with at least one runway more than 3,200 feet in length
Code of Federal Regulations (CFR) Title 49 Subtitle B, Parts 171-173, 177-178, 350-359, 397.9 and Appendices A-G	Addresses safety considerations for the transport of goods, materials and substances. Governs the transportation of hazardous materials including types of materials and marking of the transportation vehicles.
State	
California Vehicle Code, sections 13369, 15275, 15278	Requires licensing of drivers and the classification of license for the operation of particular types of vehicles. A commercial driver's license is required to operate commercial vehicles. An endorsement issued by the Department of Motor Vehicles (DMV) is required to drive any commercial vehicle identified in section 15278.
California Vehicle Code, sections 31303-31309	Requires transportation of hazardous materials to be on the state or interstate that offers the shortest overall transit time possible.
California Vehicle Code, sections 31600-31620	Regulates the transportation of explosive materials.
California Vehicle Code, sections 32100-32109	Requires shippers of inhalation hazards in bulk packaging to comply with rigorous equipment standards, inspection requirements, and route restrictions.
California Vehicle Code, sections 34000-34100	Establishes special requirements for vehicles having a cargo tank and for hazardous waste transport vehicles and containers, as defined in section 25167.4 of the Health and Safety Code.
California Vehicle Code, section 35550-35551	Provides weight guidelines and restrictions vehicles traveling on freeways and highways.

[1] On October 11, 2011, BLM published a Notice of Intent to prepare an Environmental Impact Statement (EIS) for the proposed Valley Electric Association Hidden Hills Transmission Project (NVN-089669), Clark and Nye Counties, Nevada in the *Federal Register – Volume 76, Number 196.*

Applicable Law	Description
California Vehicle Code, section 35780	Requires a single-trip transportation permit to transport oversized or excessive loads over state highways.
California Health and Safety Code, section 25160	Addresses the safe transport of hazardous materials.
Nevada Administrative Code – Hazardous Materials, Chapter 459, section 459.9785	Lists prerequisites to transportation of hazardous materials for which federal safety permit is required.
Nevada Administrative Code – Hazardous Materials, Chapter 459, section 459.986	Requires Inspection of vehicles; verification of drivers' qualifications.
Nevada Administrative Code-Traffic Laws, section 484.500	Requires a transportation permit for the operation of an oversized or overweight vehicle to travel a determined route with a designated load for a designated period.
Local	
Inyo County Regional Transportation Plan	The Inyo County Regional Transportation Plan, adopted April 22, 2009 by the Inyo County Local Transportation Commission, serves as the planning blueprint to guide transportation investments in the County involving local, state, and federal funding over the next twenty years.
Inyo County Regional Transportation Plan: Goal 2: A Transportation system which is safe, efficient and comfortable which meets the needs of people and goods and enhances the lifestyle of the county's residents.	Objective 2.1: Maintain and Improve Roadway Level of Service – Maintain or improve existing Level of Service on roadways within the county. Policy 2.2.1: Proper access – Provide proper access to residential, commercial and industrial areas.
Inyo County Regional Transportation Plan: Goal 3: Maintain adequate capacity on State Routes (SR's) and Local Routes in and Surrounding Inyo County and the City of Bishop.	Objective 3.3: Improve County routes. Policy 3.3.1: Support roadway improvements to optimize public safety – Improve county roads through specific safety improvements and maintenance.
Inyo County General Plan Circulation Element – Section 7	The Circulation Element, approved by the Inyo County Board of Supervisors on December 11, 2001, addresses the movement of people, products and materials using a variety of conveyances, from roads to railroads, bicycle paths to transmission lines. The Circulation Element presents goals, policies and implementation measures for roadways and highways; scenic highways; public transportation; bicycles and trails; railroads; aviation; canals, pipelines and transmission cables; parking and information technology/telecommuting.
Section 7.2.4 Roadways and Highways - Policy RH-1.4 Level of Service.	Maintain a minimum of Level of Service (LOS) "C" on all roadways in the County of Inyo. For highways within the County of Inyo, LOS "C" should be maintained except where roadways expansion or reconfigurations will adversely impact the small community character and economic viability of designated Central Business Districts.
Section 7.2.4 Roadways and Highways Policy RH-1.5 Proper Access.	Provide proper access to residential, commercial and industrial uses.
Section 7.2.4 Roadways and Highways Policy RH-1.6 Minimize Environmental Impacts.	Ensure that all transportation projects minimize adverse effects on the environment of the County.

Applicable Law	Description
County of San Bernardino General Plan – Section IV - Circulation and Infrastructure Element – Desert Region Goals and Policies of the Circulation and Infrastructure Element - Goal D/CI 1 – Ensure a safe and effective transportation system that provides adequate traffic movement while preserving the rural desert character of the region.	Policy D/CI 1.14 – The County should implement a traffic evaluation and monitoring program as follows: a. The following evaluation and monitoring program/criteria may be used to determine changes in the traffic level of service and the potential changes that may be caused by development within the project area. The program/criteria outlines below may also be used as guidelines for evaluating traffic changes and the level of service on project area roads: v. Unsignalized intersection mitigation may be required if the unsignalized intersection level of service, as defined in the 1985 Highway Capacity Manual, decreases one level of service to LOS B on the major, nonstopped street. Mitigation may also be required if the level of service on the minor, stopped street decreases two levels of service or drops below LOS C in accordance with the 1985 Highway Manual.

PROJECT DESCRIPTION

HHSEGS would comprise of two solar fields and associated facilities: the northern solar plant (Solar Plant 1) and the southern solar plant (Solar Plant 2). Each solar plant would generate 270 megawatts (MW) gross (250 MW net), for a total net output of 500 MW. Solar Plant 1 would occupy approximately 1,483 acres (2.3 square miles), and Solar Plant 2 would occupy approximately 1,510 acres (2.4 square miles). Refer to Figure 2.2-R1- Power Block Plot Plan (CH2 2012d).

A 103-acre common area would be established on the southeastern corner of the site to accommodate an administration building; warehouse; maintenance complex; an onsite 138kV switchyard and a natural gas metering station; asphalt-paved visitor and employee parking; landscape areas; temporary construction parking; construction trailers; a tire cleaning station and other construction support facilities (HHSG 2011a Figure 2.1-3 Site Plan of Common Area).

A 180-acre temporary construction laydown area would be located on the west side of the site and would be utilized for equipment laydown; construction parking; construction trailers; a tire cleaning station; heliostat assembly buildings and other construction support facilities.

Transmission Lines

The HHSEGS would interconnect to the Valley Electric Association (VEA) system[2]. The interconnection would require an approximately ten mile long generation tie-line (gen-tie line) from the HHSEGS site to the proposed Crazy Eyes Tap Substation[3], where the project would interconnect to the VEA electric grid. The gen-tie line would originate at

[2] In January 2013, VEA will become a participating transmission owner (PTO) and will turn operational control of its facilities over to the California Independent System Operator.

[3] In the HHSEGS Application for Certification (AFC), this substation was referred to as the Tap Substation.

the HHSEG's onsite switchyard, cross the state line, avoiding the mesquite vegetation to the south, and continue east for approximately 1.5 miles until reaching Tecopa Road.[4] At Tecopa Road, the route would head northwest paralleling Tecopa Road until it reaches the Crazy Eyes Tap Substation, which would be located immediately east of the Tecopa Road/State Route 160 intersection. The Crazy Eyes Tap Substation would interconnect to the existing VEA Pahrump-Bob Tap 230kV line.

Natural Gas Pipeline

A 12-inch diameter natural gas pipeline would be required for the HHSEGS project. Kern River Gas Transmission Company (KRGT) proposes to construct the pipeline from the HHSEGS meter station, to be located in the HHSEGS Common Area, extending 32.4 miles to KRGT's existing mainline system north of Goodsprings in Clark County, Nevada.

SETTING

The proposed HHSEGS would be located on approximately 3,277[5] acres of privately-owned land, leased in unincorporated southeastern Inyo County. The project site is triangular in shape and is bounded by the paved Old Spanish Trail Highway to the south, unpaved Quartz Street to the west, the California-Nevada border to the east, and an unpaved road along the northern border. Refer to Vicinity Map, Figure 2.1-1 (HHSG 2011a).

The project area in the vicinity of the HHSEGS site is sparsely populated. The following communities are within close proximity to the project site:

- The Town of Pahrump, Nevada, is located approximately 8 miles north (with a driving distance of approximately 28 miles via Old Spanish Trail Highway and State of Nevada Route 160) of the project site;
- The community of Sandy Valley, Nevada is approximately 19 miles to the southeast;
- The community of Tecopa, California is approximately 21 miles southwest;
- The city of Las Vegas, Nevada, is approximately 45 miles east of the project site; and
- The city of Los Angeles, California is approximately 180 miles southwest.

The project site and the surrounding private lands are characterized by a grid pattern of unpaved roads that were established when the area was subdivided in the 1960s for residential development. **Traffic and Transportation Figure 6** depicts the grid pattern of roads within the project area. Although the residential development was not constructed, the grid pattern roadways remain. This grid pattern also extends into the area of developed private land to the south of the project site and Old Spanish Trail

[4] The road is also referenced as Old Spanish Trail Highway. Both names – Tecopa Road and Old Spanish Trail Highway are generally used interchangeably.

[5] This number consists of Solar Plant 1 (1,483 acres); Solar Plant 2 (1,510 acres); Administration/Warehouse (4.8 acres); Substation (3.0 acres); Gas Metering Station (0.7 acre); Remaining construction area (94.5 acres) and the construction laydown area (180 acres).

Highway. Inyo County, in previous correspondence regarding County land use and planning issues (INYO 2012c) and the Preliminary Staff Assessment (PSA) comments (INYO 2012j) has stated to accommodate HHSEGS, the roads north of Old Spanish Trail Highway that crisscross the proposed project site would have to be abandoned.

Regional vehicular access to the project site would be provided by: Interstate 15 within the State of California and the State of Nevada; State Route 127 within the State of California[6] and State Route 160 within the State of Nevada[7]. **Traffic and Transportation Figure 1** depicts the regional street network surrounding the project site.

Primary access to the project site would be from the Old Spanish Trail Highway to the project entrance road on the east side of the project. Secondary access would also be from Old Spanish Trail Highway along the west side of HHSEGS, then along the paved road between the two solar plants. The internal roadway and utility corridors for each heliostat field and its power block would contain a 20-foot-wide paved or hardscape access roads from the entrance of the solar plant site to the power block, and then around the power block. **Traffic and Transportation Figure 2** depicts the access roads and internal roadways.

Within the heliostat fields, 20-foot wide "drive zones"[8] would be located concentrically around the power block to provide access to the heliostat mirrors for maintenance and cleaning. The drive zones would be located approximately 152 feet apart and would be grubbed to remove vegetation and smoothed. A 12-foot-wide unpaved path would be constructed on the inside perimeter of the project boundary fence for use by HHSEGS personnel to monitor and maintain perimeter security and tortoise exclusion fencing. These paths would also be grubbed, bladed, and smoothed to facilitate safe use with minimal grading where necessary to cross washes.

CRITICAL ROADS AND FREEWAYS

The transportation network within the project area consists primarily of local roadways that are generally rural in nature with limited access and state-maintained freeways.

Travel in Inyo County is primarily by automobile due to the rural nature of the local communities, low development densities, and limited options for using alternative modes of travel. The roadway network serving Inyo County is comprised of

[6] State Route 127 traverses through San Bernardino and Inyo County, State of California.

[7] State Route 160 traverses through Clark County and Nye County, State of Nevada.

[8] The AFC Project Description Section describes that within the heliostat fields, 20-foot wide "drive zones" would be located concentrically around the power block to provide access to the heliostat mirrors for maintenance and cleaning. The Soils & Surface Water Section of this FSA, however, states these concentric drive zones would be 10-foot wide roads based on the Applicant's Post-Construction Hydrologic and Hydraulic Analysis and the Preliminary Draft Construction Drainage, Erosion and Sedimentation Control Plan/Stormwater Pollution Prevention Plan – Appendix 5.15A – Civil Overall Site Plan – C-1000. Refer to the Soils & Surface Water section for additional information. However, whether these "drive zones" are 10 feet wide or 20 feet wide does not affect the proposed Findings of Fact for this Traffic and Transportation analysis.

approximately 3,520 miles of streets, roads, and highways. Many existing county roads and city streets have extremely light use, and many roads receive only minimal or emergency maintenance because of funding constraints (ICRTP 2009).

The construction workforce travel that would occur within San Bernardino County would also be primarily by automobile due to the sheer size of the County[9]. The roadway network serving San Bernardino County is comprised of approximately 10,000 miles of roads falling within oversight of three governmental agencies responsible for the construction and maintenance of the roadway infrastructure. The California Department of Transportation (Caltrans) is responsible for maintaining approximately 1,240 miles of roadway throughout the County. This total includes six federal (Interstate) freeways, two federal (U.S.) highways, and 18 state highways. The San Bernardino County Department of Public Works is responsible for maintaining approximately 2,830 miles of both paved and unpaved roadways primarily located in unincorporated areas of the County. These facilities range in classification from major arterial highways to local streets. The remaining 5,930 miles of roadways within San Bernardino County fall under the jurisdiction of the numerous incorporated municipalities located across the County (CSB 2007).

Existing Regional and Local Transportation Facilities

Traffic and Transportation Figures 1 and 3 shows the regional transportation setting and the local transportation features as described in the Application for Certification (AFC) and the Updated Workforce Analysis (UWA). The following information about critical roadways is based on the Traffic and Transportation section of the AFC (HHSG 2011a); UWA (CH2 2012jj) as well as traffic data from the California Department of Transportation (Caltrans); Inyo County Public Works Department; County of San Bernardino Department of Public Works and the State of Nevada Department of Transportation (NDOT).

Interstate 15

Interstate 15 (I-15) is located to the southeast of HHSEGS and crosses into the State of Nevada (from San Bernardino County) approximately 37 miles southeast of the project site.

I-15 is a north-south highway that extends more than 1,470 miles through the states of California, Nevada, Arizona, Utah, Idaho and Montana. This highway's southern terminus is in San Diego, California. The northern terminus is in Sweetgrass, Montana at the international border between the United States and Canada, where it becomes Alberta Highway 4. I-15 is predominately an eight-lane freeway at the south end in San Diego. Between Escondido (San Diego County) and I-40 in Barstow (San Bernardino County) a distance of 156 miles, I-15 is a six to eight lane freeway. North from Barstow I-15 is primarily a rural four-lane freeway that continues into the State of Nevada.

The majority of the I-15 through Nevada is a six lane freeway from Primm to the I-215 Beltway around Las Vegas. Between the Southern Beltway (I-215) and the I-15/US 93

[9] San Bernardino County is the largest County in the United States with a land area of 20,106 square miles and is divided into three planning areas – Valley Planning Region; Mountain Planning Region and Desert Planning Region (CSB 2007).

(Spaghetti Bowl) interchange at the north end of the Las Vegas urban area, I-15 becomes four lanes. The freeway continues to the northeast towards Arizona (I-15 CSMP 2011). According to the California Department of Transportation (Caltrans) 2008 average annual daily traffic (AADT)[10] counts, I-15 at the Nevada State line[11] carried approximately 37,000 vehicles. According to the Nevada Department of Transportation (NDOT) 2008 average annual daily counts I-15 at the north bound on-ramp of the Blue Diamond Interchange "Exit 33" carried approximately 20,000[12] vehicles. **Traffic and Transportation Figure 4** depicts the street network ADT.

State Route 160

State Route 160 (SR 160) is located approximately 10 miles east of the project site and connects to HHSEGS via the Old Spanish Trail Highway. Due to the limited number of interchanges off SR 160 in the vicinity of HHSEGS, access to the project site is provided only from the SR 160/Old Spanish Trail Highway intersection, which can be accessed by both eastbound and westbound traffic. SR 160 is an east-west highway that connects the southern Las Vegas Valley to U.S. Route 95 northwest of Las Vegas via the Pahrump Valley.

The highway is known as Blue Diamond Road within the Las Vegas area and the Pahrump Valley Highway for the remainder of the route. Near the project site, SR-160 is a divided highway with two lanes in each direction, shoulders, and a Class II bike lane.

The intersection at SR 160/Old Spanish Trail Highway is a T-intersection[13], with a stop-sign on Old Spanish Trail Highway. A separate westbound left turn lane is provided on SR 160. According to the 2008 Nevada Department of Transportation traffic counts, SR 160 carried approximately 8,900[14] vehicles west of the Old Spanish Trail Highway turnoff and approximately 40,000[15] vehicles at .3 miles north of Dean Martin Road. **Traffic and Transportation Figure 4** depicts the street network ADT.

[10]The California Department of Transportation (Caltrans), Traffic and Vehicle Data Systems Unit, defines AADT as "Annual average daily traffic is the total volume for the year divided by 365 days. The traffic count year is from October 1st through September 30th. Very few locations in California are actually counted continuously. Traffic Counting is generally performed by electronic counting instruments moved from locations throughout the State in a program of continuous traffic count sampling. The resulting counts are adjusted to an estimate of annual average daily traffic by compensating for seasonal influence, weekly variation and other variables which may be present. Annual ADT is necessary for presenting a statewide picture of traffic flow, evaluating traffic trends, computing accident rates, planning and designing highways and other purposes."

[11] The California Department of Transportation (Caltrans) Postmile 186.238.

[12] The Nevada Department of Transportation Traffic Count Stations – Station Number 0030040.

[13] A juncture where a minor road connects to a larger road and forms the shape of the letter T.

[14] The State of Nevada Department of Transportation Traffic Count Stations – Station Number 0033180.

[15] The State of Nevada Department of Transportation Traffic Count Stations – Station Number 0030044.

State Route 127[16]

State Route 127 (SR 127), also known as Death Valley Road, is a paved two-lane conventional highway[17] that traverses southeast Inyo County. The route is part of the Interregional Road System (IRRS) connecting southern California to Nevada and other rural highways. SR 127 is the closest major facility to the project site that connects to I-15 to the south of HHSEGS. SR 127 is classified as a Class II Highway[18], originates in San Bernardino County at Interstate 15 in Baker, San Bernardino County and terminates at the California/Nevada border where it converts to Nevada State Route 373 (CDOT 2011).

SR 127 is 91.03 miles and divided into four segments. **Traffic and Transportation Figure 8** depicts the four segments. Segment 1 (41.61 miles) begins at the interchange of I-15 at the 127/15 Separation Bridge[19] in the Community of Baker (San Bernardino County) and ends at the San Bernardino County line. In the Community of Baker speed limits range from 25 mph to 45 mph. From north of Baker, the speed limit is 55 mph. Segment 2 (16.43 miles) begins on the San Bernardino/Inyo County Line and ends at SR 178 West, the Jubilee Pass entrance to the Death Valley National Park (DVNP). Speed limits range from 35 mph in the Community of Shoshone to 65 mph outside of Shoshone. This Segment provides access to SR 178 East, also known as the Charles Brown Highway.

Segment 3 (25.72 miles) begins at SR 178 West, the Jubilee Pass entrance to DVNP and ends at its junction with SR 190, Death Valley Junction. Speed limits range from 35 mph to 65 mph. Segment 4 (7.27 miles) begins at the junction with SR 190, Death Valley Junction and ends at the California/Nevada State Line. Speed limits range from 55 mph to 65 mph. The unpaved shoulders vary in width from 0 to ten feet the length of SR 127 (CDOT 2011). SR 127 intersects Old Spanish Trail Highway approximately 50 miles north of I-15 and continues along the eastern edge of Death Valley and eventually terminates at the California /Nevada border, where State Route 373 begins. (HHSG 2011a, Page 5.12-10).

[16] State Route 127 is codified in the California Streets and Highways Code, Division 1, Chapter 2, Article 3, Section 427 “Route 127 is from Route 15 near Baker to the Nevada state line via the vicinity of Death Valley Junction.”

[17] The California Department of Transportation (Caltrans), State Route 127 Transportation Concept Report (published October 2011) defines conventional highway as “A highway without controlled access. Grade separations at intersections and access control may be used when justified.”

[18] The Highway Capacity Manual 2010 defines Class II as “Class II two-lane highways where motorists do not necessarily expect to travel at high speeds. Two-lane highways functioning as access routes to Class I facilities, serving as scenic or recreational routes (and not as primary arterials), or passing through rugged terrain (where high-speed operations would be impossible) are assigned to Class II. Class II facilities most often serve relatively short trips, the beginning or ending portions of longer trips, or trips for which sightseeing plays a significant role.”

[19] Bridge number 54.0610 built in 1965; Postmile L000.01; Structure Type: Steel and stringer/Multi-beam or Girder; Bridge Length 74.1 meters (243 feet); Width: 10.4 meters (34.12 feet); Permit Rating: Purple permit capacity (CDOT 2012).

According to the California Department of Transportation (Caltrans) 2008 average annual daily traffic (AADT) counts[20], SR 127 carried approximately 780 vehicles south of the SR-127/Old Spanish Trail Highway intersection.

Old Spanish Trail Highway[21]/Tecopa Road

Old Spanish Trail Highway, also referenced as Tecopa Road, is a paved two-lane north south road approximately 39 miles long connecting SR 127 in California (Inyo County) to State Route 160 in the State of Nevada. Primary access to the project site would be from Old Spanish Trail Highway to the project entrance road on the east side of the project. The majority of the project traffic would travel through the Old Spanish Trail Highway/SR 160 intersection located in the State of Nevada to access the regional road network. The existing paved width for this roadway is approximately 22 feet (INYO 2012b).The posted speed limit is 55 mph and the roadway lacks bicycle or pedestrian lanes.

According to the Inyo County Public Works Department 2007 average daily traffic counts (ADT), Old Spanish Trail Highway[22] carried an average of approximately 258 vehicles traveling west and 275 vehicles traveling east a day in 2007.

Baker Boulevard

Baker Boulevard[23] is a paved two-lane, major collector road located in the Community of Baker, in San Bernardino County. The road is accessed by the northbound and southbound traffic from the I-15 Death Valley/Kelbaker Road Interchange[24]. The road runs parallel to I-15 and is approximately 2.6 miles long. Baker Boulevard intersects SR 127 approximately 1,600 feet from the northbound offramp and approximately 305 feet from the southbound offramp. The intersection of SR 127/Baker Boulevard is controlled by a four way stop sign.

According to the County of San Bernardino Department of Public Works 2012 Average Daily Counts (ADT) Baker Boulevard carried an average of 5,541 vehicles west of SR 127 and 7,829 vehicles east of SR 127 (CSB 2012).

Level of Service

When evaluating the project-related impacts on the local transportation system, staff bases its analysis on Level of Service (LOS) determinations. Level of service is a

[20] The California Department of Transportation (Caltrans) Postmile 6.510.

[21] The Old Spanish Trail Highway is not the same infrastructure as the Old Spanish Trail. As discussed in the Cultural Resources Section "The Old Spanish Trail Recognition Act of 2002 (Act) defines the trail as "an approximately 2,700 mile long trail extending from Santa Fe, New Mexico, to Los Angeles, California, that served as a major trade route between 1829 and 1848…including the Armijo Route, Northern Route, North Branch, and Mojave Road" and refers to maps in the 'Old Spanish Trail National Historic Trail Feasibility Study', dated July 2001, (16 USC 1241). The Old Spanish Trail-Mormon Road, as documented by the Act, is located on the south side and just outside of the project site."

[22] The location of the traffic count was approximately .2 miles west of the State of Nevada line.

[23] The County of San Bernardino, Department of Public Works, identifies Baker Boulevard as Road Number 150500.

[24] Exit Number 246 as assigned by the Department of Transportation (Caltrans), California Numbered Exit Uniform System (Cal-NExUS).

generally accepted measure used by traffic engineers, planners, and decision-makers to describe and quantify the congestion level on a particular roadway or intersection in terms of speed, travel time, and delay.

The Highway Capacity Manual 2010, includes six levels of service for roadways or intersections ranging from LOS A - the best operating conditions - to LOS F - the worst, most congested operating conditions.

To quantify the existing baseline traffic conditions, the study area state highways, roadways, and intersections were analyzed in the AFC to determine their operating conditions. Based on the traffic volumes, the turning movement counts, and the existing number of lanes at each intersection, the LOS) have been determined for each intersection.

LOS is a qualitative measure describing operational conditions within a traffic stream. It is used to describe and quantify the congestion level on a particular roadway or intersection and generally describes these conditions in terms of such factors as speed or vehicle movement. **Traffic and Transportation Table 2** summarizes intersections LOS criteria based on seconds of delay.

Traffic and Transportation Table 2
Level of Service Criteria for Intersections

Level of Service	Control Delay (seconds/vehicles)	Description
A	≤10	Free flow; insignificant delays
B	>10 and <15	Stable operation; minimal delays
C	>15 and <25	Stable operation; acceptable delays
D	>25 and <35	Approaching unstable flow; queues develop rapidly but no excessive delays
E	>35 and <50	Unstable operation; significant delays
F	>50	Forced flow; jammed conditions

Source: Transportation Research Board, 2010, Highway Capacity Manual

Current Roadway Segment Conditions - Level of Service

Level of service standards for the roadways in the vicinity of the HHSEGS project are established by and under the jurisdiction of the County of Inyo; County of San Bernardino and the California Department of Transportation. Staff used the County of Inyo and County of San Bernardino LOS standards to evaluate potential HHSEGS generated traffic impacts. The following is a list of the applicable California Department of Transportation, Inyo County and San Bernardino County LOS standards.

The LOS for the State of Nevada I-15 segment and SR 160 are established by the State of Nevada. Information regarding the LOS for Clark and Nye counties has also been included.

In the State of California, volumes of traffic are measured in terms of peak hour estimates for actual vehicles and annual average daily traffic (AADT) for both lanes of travel (i.e., ahead and back). The State of Nevada published AADT numbers do not differentiate between travel directions, or do they record specific numbers for peak travel times.

State of California

California Department of Transportation-The State Route 127 Transportation Concept Report[25] (TCR) is a long range planning document that describes the current characteristics of the SR 127 transportation corridor and establishes a twenty-year planning concept. The TCR defines the California Department of Transportation (Caltrans) goals for the development of the corridor in terms of facility type and Level of Service (LOS), while broadly identifying the improvements needed to reach those goals.

The TCR covers the 91.03 miles of SR 127 addressed in the four segments. **Traffic and Transportation Figure 8** depicts the four segments. The AADT varies along the route from 255 to 1,050 vehicles. Truck traffic and recreational vehicles make up approximately 12 percent of AADT. The Concept LOS for SR 127 for all four segments is LOS C. The SR 127/Old Spanish Trail Highway intersection falls within Segment 2 which is currently operating at LOS A. Segments 1, 3 and 4 are also currently operating at LOS A (CDOT 2011).

Inyo County - The Inyo County General Plan - Circulation Element Policy RH-1.4, Level of Service, requires a minimum of "Level of Service (LOS)[26] C" be maintained on all roadways in the County of Inyo. For highways within the County of Inyo, LOS "C" should be maintained except where roadways expansion or reconfigurations will adversely impact the small community character and economic viability of designated Central Business Districts.

San Bernardino County – Where Baker Boulevard, a County roadway, intersects SR 127, the County of San Bernardino accepts the Department of Transportation (Caltrans) criteria, which is a delay of no more than 45 seconds (LOS E)(CEC 2012ll).

State of Nevada

Nevada Department of Transportation (NDOT) - The minimum LOS for SR 160 is LOS C (CEC 2012v).

Clark County – The Clark County Transportation Element[27] is intended to provide information to the public on future transportation needs in the context of projected growth and development. The transportation goals and policies are grouped into six subject areas: Public Process; Connecting Land Use; Access and Safety; Protecting the Environment; Designing the Transportation System; Implementing the Transportation System.

[25] Published October 2011 by California Department of Transportation (Caltrans) District 9, System Planning.

[26] Inyo County defines Level of Service (LOS) as "A method to describe how well a roadway is operating. Based on a roadway's volume to capacity (V/C) ratio, a letter designation is assigned that represents the traffic flow conditions. The letter designations A through F represent progressively declining conditions, with A indicating excellent maneuverability and stable speeds and F indicating a breakdown of flow and unstable, erratic speeds".

[27] Adopted by the Clark County Board of County Commissioners on July 16, 2003; Last Amendment December 3, 2008.

Policy T-5.3 of the *Designing* the *Transportation System Goal* requires "Level of Service (LOS) D should be the design objective for non-residential local, collector and arterial streets. LOS C should be the design objective for residential local, collector and arterial streets. The design year to be used by all developers should be the build-out year of the development's final phase" (CCTE 2008).

Nye County – The Streets and Highways Capital Improvement Plan[28] (CIP) FY 2006-2015 evaluates the existing transportation infrastructure and provides planning for Nye County residents to satisfy the local and regional mobility needs. The plan addresses both the improvement of existing streets as well as the construction of new roadways designed to accommodate future traffic from existing and proposed development.

The majority of the existing roadways consist of two lane rural streets. The existing capacity of the identified arterial roadways slated for improvements operate below capacity, at LOS A, B and C. In addition, no roadway improvements were identified in and around HHSEGS project area (SHCIP 2005).

Traffic and Transportation Table 3 includes information regarding the existing LOS for the potentially affected intersections in the project area. The AFC and PSA analyzed the SR 160/Old Spanish Trail Highway intersection located within the State of Nevada as it was assumed approximately 95 percent of the project traffic (100% truck-trips and 95% automobiles) would use this intersection to access HHSEGS.

The UWA, however, has identified two additional potentially affected intersections located within the State of California: SR 127/Old Spanish Trail Highway located in Inyo County and SR 127/Baker Boulevard located in San Bernardino County. **Traffic and Transportation Figure 3** depicts SR 160/Old Spanish Trail Highway and the two additional intersections of SR 127/Old Spanish Trail Highway and SR 127/Baker Boulevard.

LOS A represents free-flowing traffic; whereas LOS F represents slow-moving or stalled traffic (overcapacity operation). The SR 160/Old Spanish Trail Highway intersection (State of Nevada) currently operates at LOS A; the SR 127/Old Spanish Trail Highway intersection (Inyo County, California) currently operates at LOS A (LOS B for the PM peak hour westbound right) and SR 127/Baker Boulevard (San Bernardino County) currently operate at LOS A (LOS B for the PM peak hour).

[28] Approved by the Pahrump Regional Planning District July 20, 2005.

Traffic and Transportation Table 3
Existing Intersection Level of Service
State of Nevada and State of California

		Existing Conditions			
Intersection	**Approach/Movement**	**AM Peak Hour**		**PM Peak Hour**	
SR 160/Old Spanish Trail Highway (State of Nevada)	Northbound left/right	9.3[1]	A	9.7[1]	A
	Westbound left	8.1[1]	A	7.9[1]	A
SR 127/Old Spanish Trail Highway (State of California, Inyo County)	Southbound left	7.4[2]	A	7.4[2]	A
	Westbound left	9.4[2]	A	9.4[2]	A
	Westbound right	8.8[2]	A	8.8[2]	B
SR 127/Baker Boulevard (State of California, San Bernardino County)	Eastbound	7.6[3]	A	10.2[3]	B
	Westbound	8.4[3]	A	10.7[3]	B
	Northbound	8.2[2]	A	12.0[2]	B
	Southbound	8.2[2]	A	10.1	B

*Source: Hidden Hills Solar Electric Generating System Application for Certification, Table 5.12-3; Updated Workforce Analysis Table 5.12-3R1 and Technical Memorandum Table 2 (*CH2 2012rr).

1 - The intersection level of service (LOS) was calculated using the Highway Capacity Software (HCS+ McTrans, version 5.21). Since the focus of the analysis was on unsignalized intersections, the LOS was determined using seconds of delay (CEC 2012n).
2 - The intersection level of service (LOS) was calculated using the Highway Capacity Software (HCS+ McTrans, version 5.5).
*3 - The intersection level of service (LOS) was calculated using Synchro (Version 8.0)(*CH2 2012rr).

PUBLIC TRANSPORTATION

Public transportation consists of bus service, bicycle and pedestrian facilities, airports and rail service. Information about these forms of public transportation follows.

Bus Service

The Eastern Sierra Transit Authority (ESTA) provides public transit service for Inyo and Mono Counties. ESTA began operating transit services on July 1, 2007, assuming control of all the services, staff and capital formerly known as Inyo Mono Transit. The ESTA provides four types of mass transit services to the region: Fixed Routes, Seasonal, Dial-a-Ride and Vanpool.

The nearest transit line to the project site is the Tecopa-Pahrump Fixed Route[29] which provides services to the Tecopa Senior Center, Shoshone Medical Center and the Pahrump Walmart. The Tecopa-Pahrump bus operates the first Thursday after the 3rd calendar day of the month and two weeks later (ESTA 2012).

Nation-wide bus service is not provided in Inyo County. Greyhound discontinued bus service in 2001 which resulted in Inyo and Mono counties forming the Carson Ridgecrest Eastern Sierra Transit (CREST) bus service. CREST provides service from Lancaster, California to Reno, Nevada. Nation-wide bus service is provided by Greyhound at the terminus of the CREST bus line.

Bicycle and Pedestrian Facilities

The Inyo County Collaborative Bikeways Plan (Plan) [30] is the bicycle transportation plan for Inyo County, the city of Bishop and the Bishop Paiute Tribe. The Plan's goal is developing a safe, convenient and effective bikeway system that promotes bicycle travel as a viable transportation mode and connects to work, schools, residential and recreation areas.

Due to the remoteness of the area there are no designated bicycle lanes in the area (other than SR 160) or adjacent to HHSEGS. Bicycles on rural highways and roads travel on paved shoulders where they are present, sufficiently wide, unobstructed by vegetation and of good pavement quality. On low-volume rural roads without paved shoulders, bicyclist travel one or more feet from the pavement edge depending on pavement quality (ICCBP 2008).

The Plan has identified upgrades of eight bicycle facilities within the Tecopa area (Appendix 5A). However, the HHSEGS site is located outside of these proposed upgrades; therefore, no bicycle facilities are planned for the study area.

In addition, due to the remoteness of the area, pedestrian facilities, such as sidewalks and walkways do not exist in the area or adjacent to HHSEGS.

Airports

The closest commercial operational airport to HHSEGS is the McCarran International Airport in Las Vegas, Nevada approximately 45 miles to the east. The closest proposed commercial airport to HHSEGS would be the Pahrump Valley General Aviation Airport located approximately 10 miles northwest in Nye County, Nevada. The airport would primarily serve small aircraft less than 12,500 pounds, with wingspans of 49 feet or less (HHSG 2011a). The Town of Pahrump (Town) has requested Federal Aviation Administration (FAA) assistance to establish a public use, general aviation airport in the Town of Pahrump to serve the Town and the surrounding Pahrump Valley in Nye County, Nevada.

[29] Fixed routes are town to town and in-town routes with fixed schedules and fixed stops.

[30] The Inyo County Collaborate Bikeways Plan was approved by the Inyo County Board of Supervisors on November 18, 2008; on November 19, 2008 by the Inyo County Local Transportation Commission; the City of Bishop on November 24, 2008 and the Bishop Paiute Tribe on December 4, 2008.

Pahrump has received Airport Improvement Program grant funds to assist in the cost of preparing an Environmental Impact Statement (EIS) for the proposed project, which would be constructed on Bureau of Land Management (BLM) owned property. The Town is in the process of establishing a cost recovery account with BLM for their participation in the EIS. Once that account is established, the FAA and the BLM anticipate entering into a Memorandum of Understanding for preparation of the EIS for the proposed airport. The EIS process is expected to take several years. After completion of the EIS the FAA and the BLM could proceed to take federal agency actions regarding the proposed airport project.

Military Airports

There are two nearby United State Air Force Bases: Nellis Air Force Base and Edwards Air Force Base. An Obstacle Evaluation Study (August 16, 2010), was prepared for the HHSEGS project to identify obstacle clearance surfaces established by the Federal Aviation Administration (FAA) that would limit the height or location of proposed solar towers within the defined study area (HHSG 2011a). As a part of this study, the Department of Defense (DOD) was contacted for their review and input to determine whether there would be an impact from the solar power tower development with regard to military mission operations.

The response from the DOD stated that the proposed project would not have any military mission impacts and the towers are not under the military training routes (CEC 2012I).

Freight and Passenger Rail

There is no freight or passenger rail service in the County of Inyo. The Union Pacific Railroad provides a mainline freight service from southern California to Mojave in Kern County. At Mojave, several spur lines branch from the main line. The Searless branch heads east from Mojave, then a spurline branches off at Searless (near Trona) heading north and terminating in Lone Pine (ICRTP 2009).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION METHODS AND THRESHOLDS FOR DETERMINING SIGNIFICANCE

Significance criteria used in this document for evaluating environmental impacts are based on the CEQA Guidelines, the CEQA Environmental Checklist for Transportation/Traffic, and applicable LORS used by other governmental agencies. Specifically, staff analyzed whether the proposed project would result in the following:

1. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections);

2. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and

relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;

3. Conflict with an applicable congestion management program, including, but not limited to, level of service standards (LOS) and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;

4. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);

5. Result in inadequate emergency access;

6. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities;

7. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risk;

8. Produce a thermal plume in an area where flight paths are expected to occur below 1,000 feet from the ground[31]; or

9. Have individual environmental effects which, when considered with other impacts from the same project or in conjunction with impacts from other closely related past, present, and reasonably foreseeable future projects, are considerable, compound, or increase other environmental impacts.

DIRECT/INDIRECT IMPACTS AND MITIGATION

The direct and indirect impacts of the proposed HHSEGS on traffic and transportation system are discussed in this section and based on an analysis comparing pre-HHSEGS and post-HHSEGS conditions. Staff evaluated the HHSEGS's impacts for two separate future scenarios: the peak construction period (when construction activity and employment would be maximized) and the first year of full operation.

Study Location

The below roadway segments, located within the State of Nevada and the State of California, were selected for evaluation because they provide the most direct route to the project site and would most likely be affected by project traffic during project construction and operation.

Roadway Segments:

- The intersection of State Route 160/Old Spanish Trail Highway located in the State of Nevada.

[31] The FAA recommends that pilots avoid overflight of plume-generating industrial sites below 1,000 feet AGL (FAA 2006).

- The intersection of State Route 127/Old Spanish Trail Highway located in the State of California (Inyo County).
- The intersection of SR 127/Baker Boulevard located in the State of California (San Bernardino County).

Construction Period Impacts and Mitigation

Staff analyzed the proposed HHSEGS's potential traffic impacts by evaluating state route segments, roadway segments, and intersections in the vicinity of the project site. Staff compared existing traffic volumes and levels-of-service (LOS) to traffic volumes and LOS projected after addition of HHSEGS construction workforce and truck traffic.

The analysis of HHSEGS construction impacts focuses on the peak construction period, which would generate the most vehicle trips and result in the worst-case scenario for traffic and transportation impacts.

Construction Workforce Traffic

A large regional workforce would commute daily from locations relatively near the project site and would supply the majority of construction labor. To reach the HHSEGS site, construction traffic would use I-15, SR-160, SR-127 and the Old Spanish Trail Highway.

The Application for Certification, Traffic and Transportation Section and the Preliminary Staff Assessment analyzed the following approximate percentage of construction trips by route:

- 95 percent of the project trips, (100% truck trips and 95% automobiles), would use a route from the east or west within the State of Nevada via SR-160, then south on Old Spanish Trail Highway and then east to the project site; and
- 5 percent of the project trips, automobiles only, would use a route from the north or south within the State of California via SR-127 in Inyo County, then to Old Spanish Trail Highway and then to the project site.

Subsequent to the PSA, the applicant submitted an Updated Workforce Analysis (UWA) on October 1, 2012 (CH2 2012jj). These updated workforce assumptions were based primarily on new workforce numbers associated with the draft Project Labor Agreement, as well as experience acquired from the development of the Ivanpah Solar Electric Generating System project. The UWA contains the following assumptions:

- 100 percent of the California workforce (that returns home) would drive their own vehicles between home (in the State of California) and their hotel at the start of their work week;
- 70 percent of the workforce is assumed to be from California and 30 percent of the workforce is assumed to be from Nevada;
- The State of California workforce (dayshift) would carpool from their hotels Tuesday through Thursday, when travelling between their place of lodging and the site at a rate of 1.5 people per car;

- 50 percent of the State of California workforce would return home on Friday afternoon, directly from the site, because it is the end of their 5-day work week;
- 40 percent of the State of California workforce would return home on Saturday afternoon after they complete an additional Saturday shift;
- 90 percent of the State of California swing shift workforce would drive directly to the work site on Monday in their own vehicles and 10 percent would remain over the weekend and would commute between the work site and their hotel;
- 80 percent of the State of California dayshift workforce would arrive at their hotel on Sunday evening and 20 percent would commute from home directly to the site on Monday morning;
- From their place of lodging (State of California workers) or their residences (State of Nevada workers) to the work site, day shift ridership would average 1.2 persons per vehicle (on an average basis, vehicle use was calculated at 100 workers/1.2 workers per vehicle= 83 vehicles per 100 workers);
- As the day shift workforce approaches 1,000 workers, 15-passenger vans would be used to increase the day shift ridership to 1.5 persons per vehicle for California workers (during the peak months of construction, vehicle use was calculated at 100 workers/1.5 workers per vehicle = 67 vehicles per 100 workers);
- The ridership for State of Nevada workers would remain at 1.2 persons per vehicle throughout the project construction period; and,
- The California and Nevada swing shift carpool rate would average 1.2 persons per vehicle regardless of the size of the swing shift workforce.

Work-week durations were also updated for both day shift and swing shift:

- 50 percent of the workforce was assumed to work a 5-day, 10-hour-per-day work week (Monday through Friday for day shift; Monday night through Saturday morning for swing shift).
  Of those workers:
  - The California workforce was assumed to drive their cars to the work site on Friday and leave to return home following their shift.
  - The Nevada workforce was assumed to carpool averaging 1.2 persons per vehicle.
- 40 percent of the workforce would stay and work an additional 10-hour shift on Saturday, returning home at the end of their shift.
- 10 percent of the State of California workforce would stay over the weekend.
- 100 percent of truck traffic would still use a route from the east or west within the State of Nevada via SR 160, then south on Old Spanish Trail Highway and east to the project site.

All phases of construction for HHSEGS (from perimeter fencing, site preparation, grading and commercial operation) would be completed over an approximately 29-month period, from the second quarter of 2013 to the fourth quarter of 2015. The common area facilities would be constructed during construction of Solar Plant 1. The

construction workforce would peak during Month 19 with approximately 2,293 workers (1,682 dayshift and 611 swing shift). By month 17, 1,879 workers are projected - 82 percent of the peak month. Overall, there is a 5-month period, Months 17 through 21, when the number of workers would be within approximately 20 percent of the peak. In addition, a peak of approximately 66 workers would be required to construct the gas and transmission line which would occur during month 16. However, the construction of these facilities would not coincide with the peak of the plant site construction employment.

The weekly project construction schedule is anticipated to be two, 10-hour shifts; a Monday through Friday Day Shift (5:00 am to 3:30 pm), and a Monday night to Saturday morning Swing Shift (6:00 pm to 4:30 am). During the summer season, the daily work hours would be adjusted earlier (in half hour increments) in order to take advantage of the cooler temperatures and promote worker safety.

The potential traffic impacts have been analyzed for the day shift (5:00 am to 3:30 pm) during the peak construction month. Although the employee trips would occur outside of typical peak hours (generally 7:00 am to 9:00 am and 4:00 pm to 6:00 pm), this shift represents the greatest number of employees arriving and departing the site at one time (1,682 employees). Given the remote location of the project site, the high cost of gas, and the type of construction being conducted, the UWA estimates that the baseline carpool rate for the State of Nevada workforce would be 1.2 percent and for the State of California it would be 1.5 percent.

Based on the UWA assumptions, HHSEGS would generate a total of 4,000 daily construction related trips (3,820 daily automobile trips and 180 truck trips) during the peak construction month. Of the 3,820 daily automobile trips, 1,411 (1,401 automobile and 10 truck) trips would occur during the morning peak hour and 1,411 (1,401 automobile and 10 truck) trips would occur during the afternoon peak hour.

The total project trip generation, which is now delineated by a Monday, Tuesday-Thursday and Friday commute, including the construction truck traffic, during the peak construction month is summarized in **Traffic and Transportation Table 4**. The peak construction workforce trips per shift for Month 19 are summarized in **Traffic and Transportation Table 5.**

The peak construction workforce trips for the day shift and swing shift are summarized in **Traffic and Transportation Table 6** and the peak construction workforce trips depicting the workforce and carpool rate is summarized in **Traffic and Transportation Table 7.**

Traffic and Transportation Table 4
Peak Construction Trip Generation (Month 19)

	Daily Trips*					Peak Hour Trips		
	Monday	Tuesday-Thursday	Friday			Monday	Tuesday-Thursday	Friday
Automobiles	3,714	3,430	3,820			1,284	1,206	1,401
Trucks**	180	180	180			10	10	10
Total	3,894	3,610	4,000			1,294	1,216	1,411

Source: Hidden Hills Solar Electric Generating System Updated Workforce Analysis Table 5.12-4R1.

*****Daily trips include combined trips generated by dayshift and swing shift.

** Assumes truck trips are spread equally throughout the day from 6:00 a.m. to 6:00 p.m.

Traffic and Transportation Table 5
Peak Construction Workforce (Month 19)

Project Site Workforce	Day Shift (5:00am to 3:30pm)	Swing Shift (6:00pm to 4:30am)	TOTAL
Craft	1,192	511	1,703
Non-Craft	490	100	590
Total Workforce	1,682	611	2,293

Source: Hidden Hills Solar Electric Generating System Updated Workforce Analysis Table 5.12-5R1

Traffic and Transportation Table 6
Peak Construction Workforce Trips (Month 19)

	Day Shift		Swing Shift		Combined
	One-Way Trips	Daily Trips	One-Way Trips	Daily Trips	Daily Trips
Monday	1,284	2,568	573	1,146	3,714
Tuesday-Thursday	1,206	2,412	509	1,018	3,430
Friday	1,401	2,802	509	1,018	3,820

Source: Hidden Hills Solar Electric Generating System, Updated Workforce Analysis Table TT-1.

Traffic and Transportation Table 7
Peak Construction Workforce Trips (Month 19, Day Shift)

Workforce/Carpool Rate	State of California	State of Nevada	Total
State of California/State of Nevada Workforce Split	70%	30%	100%
Dayshift Construction Workforce	1,177	505	1,682
Baseline Carpool Rate (people per vehicle)	1.5	1.2	
Monday Commute • Carpools	628[B,B1]	421[A, A1]	1,049
• Single Occupant Vehicles	235[B]		235
• Total Vehicles	863	421	1,284
• Trips In/Out[E]	1,726	842	2,568
Weekday Commute (Tuesday-Thursday) • Carpools	785[C, C1]	421[A, A1]	1,206
• Trips In/Out[E]	1,570	842	2,412
Friday Commute • Carpools	392[D, D1]	421[A,A1]	813
• Single Occupant Vehicles	588[D]		588
• Total Vehicles	980	421	1,401
• Trips In/Out[E]	1,960	842	2,802

Source: Hidden Hills Solar Electric Generating System Updated Workforce Analysis – CH2 2012jj, Table TT-2

A. The Nevada workforce would carpool at a rate of 1.2 people per car, Monday through Friday.

B. On Monday, 80 percent of the California workforce would carpool at a rate of 1.5 people per car and 20 percent would drive alone. Not all of the 80 percent would be "carpools," but the overall average would be 1.5 people per car for this group, so the line is described as "Carpools."

C. The California workforce would carpool at a rate of 1.5 people per car, Tuesday through Thursday.

D. On Friday, 50 percent of the California workforce would carpool at a rate of 1.5 people per car and 50 percent would drive alone.

E. Assumes one incoming trip per vehicle during AM peak and one outgoing trip per vehicle during PM peak.

A1 – (505)(Dayshift Construction Workforce)/(1.2) = 421 carpools.

B1 - (0.80)(1,177)=941.6 carpooling workers/1.5 carpooling workers/vehicle = 628 carpools.

C1 – (1,177)/(1.5 workers/vehicle) = 785 carpools.

D1 – (1,177)/(0.50) = 588.5 carpooling workers = (588.5)/(1.5 workers per vehicle) = 392 carpools.

Based on the UWA, regional street network, current travel patterns, lodging locations, and anticipated employee origins (70 percent of the workforce is assumed to be from California, and 30 percent of the workforce is assumed to be from Nevada), it is anticipated that HHSEGS construction traffic (for the dayshift) would be distributed as shown in **Traffic and Transportation Table 8** and **Traffic and Transportation Table 9**. The tables combine both the State of California and State of Nevada workforce and also depict the carpool rates and commute pattern assumptions. As shown below, separate distributions were conducted for the Monday commute, Tuesday through Thursday (weekday commute) and for the Friday commute.

Traffic and Transportation Table 8
State of California and State of Nevada
AM Peak Hour Project Trip Distribution- Month 19 Day Shift

			Monday		Weekday		Friday	
Road	**Direction**	**Origin/Destination**	**Trips**	**Percent**	**Trips**	**Percent**	**Trips**	**Percent**
State Route 160	Northwest	Pahrump, Nevada	210	17%	241	20%	280	20%
Old Spanish Trail Highway	South	Tecopa, Shoshone, I-15 - California	286	22%	63	5%	79	6%
State Route 160	East	Las Vegas, Nevada	788	61%	902	75%	1,042	74%
Total			1,284	100%	1,206	100%	1,401	100%

Source: Hidden Hills Solar Electric Generating System Updated Workforce Analysis Table 5.12-7AR1

Traffic and Transportation Table 9
State of California and State of Nevada
PM Peak Hour Project Trip Distribution – Month 19 Day Shift

			Monday		Weekday		Friday	
Road	**Direction**	**Origin/Destination**	**Trips**	**Percent**	**Trips**	**Percent**	**Trips**	**Percent**
State Route 160	Northwest	Pahrump, Nevada	257	20%	241	20%	163	12%
Old Spanish Trail Highway	South	Tecopa, Shoshone, I-15 – California	69	5%	63	5%	619	44%
State Route 160	East	Las Vegas, Nevada	958	75%	902	75%	619	44%
Total			1,284	100%	1,206	100%	1,401	100%

Source: Hidden Hills Solar Electric Generating System Updated Workforce Analysis Table 5.12-7BR1

Refer to **Traffic and Transportation Figure 5** for the AM project trip distribution percentages and **Traffic and Transportation Figure 9** for the PM project trip distribution percentages. **Traffic and Transportation Table 10** and **Traffic and Transportation Table 11** depicts the existing intersection LOS conditions plus HHSEGS for SR 160/ Old Spanish Trail Highway; SR 127/Old Spanish Trail Highway and SR 127/Baker Boulevard.

Traffic and Transportation Table 10
State of Nevada and State of California
Comparison of State Route 160/Old Spanish Trail Highway; State Route 127/Old Spanish Trail Highway and State Route 127/Baker Boulevard Intersections
Existing Conditions Plus HHSEGS LOS
AM Peak Hour – Day Shift

				Existing Conditions With HHSEGS AM Peak					
		Existing AM Peak		Monday		Tuesday-Thursday		Friday	
Intersection	**Approach/Movement**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
SR 160/Old Spanish Trail Highway (State of Nevada)	Northbound left/right	9.3	A	9.9	A	10.0	A	100+	F
	Westbound left	8.1	A	24.3	C	60.6	F	100+	F
SR 127/Old Spanish Trail Highway (State of California, Inyo County)	Southbound left	7.4	A	7.9	A	N/A[1]	N/A[1]	N/A[1]	N/A[1]
	Westbound left	9.4	A	9.4	A	N/A[1]	N/A[1]	N/A[1]	N/A[1]
	Westbound right	8.8	A	10.1	B	N/A[1]	N/A[1]	N/A[1]	N/A[1]
SR 127/Baker Boulevard (State of California, San Bernardino County)	Eastbound	7.6	A	8.7	A	N/A[2]	N/A[2]	N/A[2]	N/A[2]
	Westbound	8.4	A	9.6	A	N/A[2]	N/A[2]	N/A[2]	N/A
	Northbound	8.2	A	12.9	B	N/A[2]	N/A[2]	N/A[2]	N/A[2]
	Southbound	8.2	A	8.7	A	N/A[2]	N/A[2]	N/A[2]	N/A[2]

*Source: Hidden Hills Solar Electric Generating System Application for Certification, Table 5.12-8 and and Hidden Hills Solar I, LLC and Hidden Hills Solar II, LLC Preliminary Staff Assessment Comments (CH2 2012ee); Updated Workforce Analysis Table 5.12-8AR1 and Technical Memorandum Table 2 (*CH2 2012rr).

1 - Not Applicable – The intersection was not analyzed for Weekday/Friday morning peak hour because there would not be any project trips added to the intersection during this period.

2 – Not Applicable – Turning movement counts were collected on two Mondays (October 22, 2012 and October 29, 2012) from 5:00a.m. – 8:00a.m.

The Traffic and Transportation Section of the PSA stated the SR 160/ Old Spanish Trail Highway would operate at LOS A during the morning peak hour, and LOS F during the afternoon peak hour under the existing plus project conditions. During the AM peak period, the LOS changes primarily on the eastbound left-turn from SR 160 to Old Spanish Trail Highway. During the PM peak period, the turning movement issues are for the northbound movements—both left- and right turns (HHSG 2011a, page 5.12-19). LOS F is not an acceptable level of service on State of Nevada highways.

As a result of the updated workforce traffic, additional potential traffic impacts have been identified for the SR 160/Old Spanish Trail Highway intersection during the morning peak hour (impacts were previously identified for the afternoon peak hour only).

Traffic and Transportation Table 11
State of Nevada and State of California
Comparison of State Route 160/Old Spanish Trail Highway; State Route 127/Old Spanish Trail Highway and State Route 127/Baker Boulevard Intersections
Existing Conditions Plus HHSEGS LOS
PM Peak Hour – Day Shift

				Existing Conditions with HHSEGS PM Peak					
		Existing PM Peak		Monday		Tuesday-Thursday		Friday	
Intersection	**Approach/Movement**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
SR 160/Old Spanish Trail Highway (State of Nevada)	Northbound left/right	9.7	A	100+	F	100+	F	100+	F
	Westbound left	7.9	A	7.9	A	7.9	A	7.9	A
SR 127/Old Spanish Trail Highway (State of California, Inyo County)	Southbound left	7.4	A	N/A[1]	N/A[1]	N/A[1]	N/A[1]	7.4	A
	Westbound left	9.4	A	N/A[1]	N/A[1]	N/A[1]	N/A[1]	19.9	C
	Westbound right	8.8	A	N/A[1]	N/A[1]	N/A[1]	N/A[1]	8.8	A
SR 127/Baker Boulevard (State of California, San Bernardino County)	Eastbound	10.2	B	N/A[2]	N/A[2]	N/A[2]	N/A[2]	14.4	B
	Westbound	10.7	B	N/A[2]	N/A[2]	N/A[2]	N/A[2]	14.5	B
	Northbound	12.0	B	N/A[2]	N/A[2]	N/A[2]	N/A[2]	16.0	C
	Southbound	10.1	B	N/A[2]	N/A[2]	N/A[2]	N/A[2]	67.2	F

*Source: Hidden Hills Solar Electric Generating System Application for Certification, Table 5.12-8 and and Hidden Hills Solar I, LLC and Hidden Hills Solar II, LLC Preliminary Staff Assessment Comments (CH2 2012ee); Updated Workforce Analysis Table 5.12-8BR and Technical Memorandum Table 2 (*CH2 2012qq).

1 - Not Applicable – The intersection was not analyzed for Monday/Weekday afternoon peak hour because there would not be any project trips added to the intersection during this period.

2 – Not Applicable – Turning movement counts were collected on two Fridays (November 2, 2012 and November 9, 2012) from 4:00p.m. –7:00p.m.

Refer to **Traffic and Transportation Figure 10** for the existing conditions plus HHSEGS AM peak hour volumes and **Traffic and Transportation Figure 11** for the existing conditions plus HHSEGS PM peak hour volume for SR 160/Old Spanish Trail Highway.

Refer to **Traffic and Transportation Figure 12** for the existing peak hour intersection volumes and **Traffic and Transportation Figure 13** for the existing conditions plus HHSEGS AM/PM peak hour intersection volumes for SR 127/Baker Boulevard.

Refer to **Traffic and Transportation Figure 14** for the existing conditions plus HHSEGS Monday AM peak hour intersection volume and **Traffic and Transportation Figure 15** existing conditions plus HHSEGS Friday PM peak hour volume for SR 127/Old Spanish Trail Highway.

As shown in **Traffic and Transportation Table 10** and **Traffic and Transportation Table 11**, the SR 160/Old Spanish Trail Highway would operate at LOS F during the AM Tuesday through Friday commute and LOS F during the PM peak hour for the Monday through Friday commute under the existing plus project conditions. Up to 95 percent of the project construction traffic is estimated to travel through the SR 160/Old Spanish Trail Highway intersection during peak hours. During the AM peak period, the LOS changes primarily on the westbound left-turn from SR 160 to Old Spanish Trial Highway. During the PM peak period, the turning movement issues are for the northbound movements (both left- and right-turns) as discussed in the PSA. LOS F is not an acceptable level of service on State of Nevada highways.

The SR 127/Old Spanish Trail Highway intersection (Inyo County) would operate at LOS C or better during the Monday, Tuesday through Thursday and Friday commute under the existing plus project conditions. LOS C is an acceptable level of service on Old Spanish Trail Highway and SR 127.

Also, potential impacts have been identified for the SR 127/Baker Boulevard intersection (San Bernardino County) during the Monday morning peak hour and the Friday afternoon peak hour based on the updated project trip distribution pattern.

Based on a review of the peak hour roadway volumes on SR 127 and Baker Boulevard, the SR 127/Baker Boulevard intersection is estimated to be operating at or near capacity during peak hours. HHSEGS is projected to add 235 northbound vehicles to the intersection on Monday morning and 588 southbound vehicles[32] to the intersection on Friday afternoon. It is likely that the project-related trips that would be added to this

[32] It is assumed 100 percent of the California workforce that returns home would drive their own vehicles and use Old Spanish Trail Highway to SR 127 to I-15 for the Friday commute. The California day shift during the peak month is estimated to be 1,177 workers (this number represents the 70% assumed to come from California – 70% of 1,682 (peak dayshift)- (1,177)(.50) = 588 vehicles.

intersection would further degrade the intersection operations. The SR 127/Baker Boulevard intersection would operate at LOS B or better during the Monday AM commute under the existing plus project conditions and LOS F during the Friday PM commute. LOS F is not an acceptable level of service at this intersection.

The change in LOS at the SR 160/Old Spanish Trail Highway intersection is consistent with the proposed construction traffic patterns as it is anticipated that the majority of the project construction traffic is estimated to travel through the SR 160/Old Spanish Trail Highway intersection. Seconds of delay would increase from 9.7 seconds to 100 plus. As a result of this increase, vehicles could become stacked on Old Spanish Trail Highway as drivers merge onto SR 160.

To reduce traffic impacts on Old Spanish Trail Highway and the SR 127/Baker Boulevard intersection staff recommends Condition of Certification **TRANS-5,** which would require development and implementation of a Traffic Control Plan (TCP) to reduce construction traffic impacts to LOS; ensure sufficient parking and emergency access to the site.

The applicant's proposed mitigation measures as listed below, are generally the same as contained in the AFC and the Preliminary Staff Assessment (PSA). However, with the increase in the workforce traffic and new assumptions for dayshift workers, workforce traffic would result in additional impacts to the SR 160/Old Spanish Trail Highway intersection during the morning peak hour (impacts were previously identified for the afternoon peak hour only). In addition, the identification of increased traffic volumes to the SR 127/Baker Boulevard intersection during the Monday morning peak hour and Friday afternoon peak hour, additional mitigation is proposed beyond what was listed in the AFC and PSA.

Traffic Monitoring Program

Traffic operations at the study intersections (SR 160/Old Spanish Trail Highway; SR 127/Old Spanish Trail Highway, and SR 127/Baker Boulevard) would be visually monitored by the applicant's representative once per week, during the morning and afternoon peak hour during peak construction months. It is recommended that the monitoring begin in Month 12 when 1,176 workers are projected (approximately 51 percent of the peak) and continue through the end of Month 24 when 1,293 workers are projected (approximately 56 percent of the peak). Because the construction workforce would increase gradually over the 29-month construction period, with a peak workforce occurring during Month 19, traffic conditions would be observed as the workforce increases over time, and adjustments would be made as needed.

Carpooling

Rideshare Program

If the traffic monitoring program identifies LOS D, E or F conditions specific measures would be implemented to reduce the number of trips to the site. This analysis already includes an assumption that 15-passenger vans would be used to achieve a baseline carpool rate of 1.5 for the California workforce. However, given the high cost of gas and the remote location of the site, there are opportunities to increase the occupancy (number of people per vehicle). Improvements should target a carpool rate of 2.5 people

per car to maintain LOS D at the SR 160/Old Spanish Trail Highway intersection (consistent with the Clark County, Nevada thresholds).
Two steps are included in this mitigation measure:

- **Rideshare Program.** As part of the rideshare program, employees would be encouraged to take advantage of the existing Club Ride Program sponsored by the Regional Transportation Commission of Southern Nevada. Club Ride offers a free ridematching service that matches individuals who live and work in proximity to one another and have a similar work schedule. The program also assists in forming vanpools when demand is met.
- **Employer Sponsored Van Program.** As a supplement to the voluntary rideshare program, participation in a mandatory van program (using additional 15-passenger vans beyond the 15-passenger vans when the day shift workforce reaches 1,000 employees) may be needed to obtain the 2.5 occupancy rate for carpools. Because employees will be grouped in several hotels in their lodging areas (Pahrump and Las Vegas area), the vans could pick up and drop off employees at their hotels, significantly reducing the number of vehicles travelling to the site.

Staggered Work Shifts

If LOS E or F conditions occur at the intersections even with ridesharing and passenger vans, and temporary traffic control is not implemented, additional work shifts may need to be staggered so workers not using the rideshare program would arrive and leave the site over a longer period of time thereby reducing the potential for queues at the intersections.

Surface Restoration

An increase in traffic flow or an increase in heavy equipment on the surrounding roads may degrade the quality of the road surfaces and increase maintenance costs. Roads are designed to handle the weights of a number of vehicles for a specific period (the design life). A road's design life may diminish with increased traffic and heavy travel loads over time, resulting in a worn down road surface. In general, any construction activities that could affect existing surfaces or roadway components shall be mitigated by restoring the facility to its original condition.

Traffic Control Plan

Where project construction would require the use of traffic control (signage, flaggers, lead vehicles, etc.), a detailed traffic control plan will be prepared prior to the start of construction for review by the Compliance Project Manager (CPM), Caltrans, NDOT, Inyo County, San Bernardino County, Clark County and Nye County, and prepared in accordance with the Manual of Uniform Traffic Control Devices (MUTCD) and the California Supplement of the MUTCD. Project ingress and egress routes will be designated, and project-related vehicle traffic outside these routes would not be allowed. Nearby intersections would be evaluated to determine whether large trucks could complete turning maneuvers through the intersections.

Staff agrees with the applicant's proposed, carpooling, traffic monitoring program, staggered work shifts, surface restoration and traffic control plan. Staff recommends these proposed traffic control measures be included in Condition of Certification

TRANS-5 which would require development and implementation of a traffic control plan and Condition of Certification **TRANS-3** which would require restoration of public roads.

Construction Truck Traffic

Construction equipment deliveries and construction-related truck traffic would contribute additional trips during the construction period. The peak construction delivery periods would occur during Months 3 through 7 when materials for the concrete batch plant would be delivered for the solar tower foundations and towers. Monthly truck deliveries would peak at 717 trucks during Month 6. Peak daily truck deliveries have been estimated using delivery records from construction at Ivanpah SEGS. During the period October 2010 through April 2012, the highest number of daily truck deliveries at Ivanpah SEGS was 72. Adding a 25 percent contingency for HHSEGS would yield a maximum of 90 delivery trucks on a peak day.

The analysis of construction deliveries for the **Air Quality** assessment of this **FSA** used a more-conservative method to determine the peak daily number of delivery trucks, using a calculation based on truck volumes during the highest 12 consecutive months. The result was a conservative estimate of 384 deliveries per day, or 768 one-way truck trips per day. To be conservative and consistent with the Air Quality analysis, this larger value was used in the revised traffic analysis (CH2 2012ee).

It was assumed that the delivery truck trips would be spread evenly throughout the day, (ten trucks per day) beginning at 6:00 am and ending at 6:00 pm. Also, it was assumed that all inbound deliveries would occur in the first nine hours and all exiting delivery truck trips would occur in the last nine hours. The resulting estimate was 45 trips during the morning peak hour and 45 trips during the afternoon peak hour. **Traffic and Transportation Table 12** depicts the construction delivery schedule.

Traffic and Transportation Table 12
Monthly Construction Delivery Schedule (Number of Trucks/Trips by Month)

Month	Equipment and Materials	Heliostat Components	Total Truck Deliveries/Month	Monthly Trips (In/Out)
0	0	0	0	0
1	35	0	35	70
2	55	0	55	110
3	480	0	480	960
4	420	245	665	1330
5	407	245	652	1304
6	472	245	717	1434
7	438	245	683	1366
8	411	245	656	1312
9	112	245	357	714
10	120	246	366	732
11	148	246	394	788
12	141	246	387	774
13	137	246	383	766
14	165	246	411	822
15	171	246	417	834
16	155	245	400	800
17	137	245	382	764
18	132	245	377	754
19	108	245	353	706
20	104	245	349	698
21	96	245	341	682
22	70	0	70	140
23	55	0	55	110
24	43	0	43	86
25	36	0	36	72
26	28	0	28	56
27	28	0	28	56
28	10	0	10	20
29	0	0	0	0

Hidden Hills Solar Electric Generating System AFC Table 5.12-6 and Hidden Hills Solar I, LLC and Hidden Hills Solar II, LLC Preliminary Staff Assessment Comments (CH2 2012ee).

Construction truck traffic is proposed to use I-15 within both the State of California and the State of Nevada and SR 160 within the State of Nevada. Truck traffic would originate from southern California heading towards Las Vegas then west on SR 160 to Old Spanish Trail Highway.

Oversized or overweight trucks with unlicensed drivers could present significant hazards to the general public and/or damage roadways. To ensure that trucks comply with weight, size, and route limitations set by the Department of Transportation (Caltrans),

Nevada Department of Transportation, and Inyo County, and that drivers are properly licensed, staff has included Condition of Certification **TRANS-1** to require the project owner to obtain roadway permits for vehicle sizes and weights, driver licensing, and truck routes.

Total Construction Traffic

The HHSEGS is estimated to generate a maximum of 4,000 (3,820 automobile and 180 truck) trips during the peak month (19) with 1,411 trips occurring during the morning peak hour and 1,411 trips occurring during the afternoon peak hour.

The addition of a peak of 4,000 daily trips would have a significant impact on the structural integrity of the Old Spanish Trail Highway within both the State of Nevada and the State of California due to the current and future conditions of the roadway pavement. Old Spanish Trail Highway within Inyo County is approximately 22 feet wide, lacking both shoulders and designed drainage. According to Inyo County, the Old Spanish Trail Highway was paved around 1971, and is not constructed to current roadway standards and as a result, not built or designed for the proposed heavy construction traffic and the hauling of equipment and materials. A section of the Old Spanish Trail Highway, known as Emigrant Pass, is a winding section which hinders clear visibility of oncoming traffic. The portion of Old Spanish Trail Highway within the State of Nevada also lacks shoulders and is not designed for the proposed heavy construction traffic and the hauling of equipment and heavy materials.

Inyo County Public Works Department (ICPW) submitted a letter dated April 30, 2012 (INYO 2012h) regarding access and circulation issues. ICPW expressed concern of potential vehicular truck-related conflicts at Emigrant Pass; additional right-of-way for acceleration and deceleration lanes; sufficient entrance drives; appropriate signage and traffic control; internal circulation and an interpretive stop.

Based on AFC Table 5.12-7 - Project Trip Distribution (HHSG 2001a), truck traffic to and from the west is not expected as all truck traffic is proposed to utilize SR-160 within the State of Nevada to the project site. Therefore, based on this trip distribution; and the public safety concern of oversized trucks maneuvering through the narrow widths of the Old Spanish Trail Highway lacking shoulders or turnouts, staff recommends Condition of Certification **TRANS-4** which requires all truck traffic utilize SR160, then south on Old Spanish Trail Highway and east to the project site.

In order to accommodate the increased vehicle traffic, Inyo County has requested an additional right-of-way along Old Spanish Trail Highway which would provide for acceleration and deceleration lanes. Therefore, staff has recommended Condition of Certification **TRANS-2** to require the project owner dedicate a 24-feet right-of-way (ROW), and Condition of Certification **TRANS-3**, which requires that the project owner repair and restore all roads damaged during construction activities immediately after the damage has occurred.

As depicted in the PSA **Traffic and Transportation Table 6,** 5 percent of construction workers (43 trips) were to utilize Old Spanish Trail Highway/SR 127 to access I-15. Based on the UWA and depicted in **Traffic and Transportation Table 8 & 9**, 22 percent of construction workers (286 trips) in the AM hour and 44 percent of

construction workers (619 trips) in the PM hour are now proposed to utilize Old Spanish Trail Highway/SR 127 to access I-15 in Baker, California.

The increase of construction automobile traffic could have a significant impact on the structural integrity of the Old Spanish Trail Highway within the State of California due to the current and future conditions of the roadway pavement. Based on the UWA, the Inyo County Public Works Department anticipates that the increase in the number of vehicles using Old Spanish Trail Highway west of the project site would result in adverse impacts to road conditions during construction. The County believes those impacts would be best addressed by amending Condition of Certification **TRANS-3** to include an obligation by the applicant to repair workforce traffic road damage (1) during construction and (2) at the conclusion of construction based on a pre-construction survey of Old Spanish Trail Highway from the Nevada state line to the intersection with State Route 127 (CEC 2012kk).

Staff recommended in the PSA Condition of Certification **TRANS-3**, which requires that, the project owner repair and restores all roads damaged during construction activities. Based on the PSA comments, additional language for Condition of Certification **TRANS-3** had been proposed delineating the area to be documented from the western edge of the project site to the intersection of SR 160. Given the revised commute patterns, the area to be documented has been expanded to include Old Spanish Trail Highway from the intersection of SR 127 to the intersection of SR 160 (Nevada State Line).

In addition, in order to address the increased vehicle traffic on the Old Spanish Trail Highway located west of the HHSEGS, and the SR 127/Baker Boulevard intersection, staff recommends Condition of Certification **TRANS-5,** which would require development and implementation of a Traffic Control Plan (TCP) to reduce construction traffic impacts. An aspect of the TCP would be a work schedule and end-of-shift departure plan that would stagger Monday arrivals and Friday departures from the project site.

School and Recreation Traffic

The HHSEGS site is located within the Death Valley Unified School District (DVUSD). The DVUSD includes Death Valley National Park and all regions east of the National Park to the Nevada state line. DVUSD is the largest school district in California in terms of area served and one of the smallest in terms of enrollment. Students in grades 5-12 often travel an hour each way to and from school, while students K-4 have commutes up to 30 minutes each way. The District has four schools: Death Valley Elementary School located in the Cow Creek area of Death Valley National Park; Tecopa-Francis Elementary School located in Tecopa; Shoshone Elementary School located in Shoshone Village; and Death Valley Academy also located in Shoshone Village (DVUSD 2012).

The DVUSD has five existing school bus stops serving the Charelston View area (CEC 2012r). Of the five stops, only two are on Old Spanish Trail Highway: Ranchos Avenue at Old Spanish Trail Highway and Desert Trail Road at Old Spanish Trail Highway. Both stops are located east of Quartz Street (0.75 mile and 1.25 miles respectively), which is the proposed main construction entrance. **Traffic and Transportation Figure 2** depicts the access roads and internal roadways. Based on the HHSEGS beginning day shift

hour of 5:00 am and the swing shift hours (6:00 pm-4:30 am) construction traffic and the morning school busses (6:42 am for Desert Trail and 6:45 am for Rancho's Avenue) traffic should not intersect. Therefore, impacts to the two bus stops on Old Spanish Trail Highway would be less than significant.

However, based on the UWA, automobile construction traffic would utilize the Old Spanish Trail Highway at an increased rate. As a result, the HHSEGS ending day shift hour of 3:30 pm, there may be the potential for overlap of construction traffic with the afternoon bus stops (3:26 pm for Desert Trail and 3:28 pm for Rancho's Avenue). To reduce traffic impacts on Old Spanish Trail Highway, staff recommends Condition of Certification **TRANS-5,** which would require development and implementation of a traffic control plan to reduce construction traffic impacts.

The Dumont Dunes Off-Highway Vehicle (OHV) Area is a remote area for off-highway vehicle recreation located east of Highway 127, approximately 31 miles north of Baker, California. Most visitors ride motorcycles or ATVs, sand rails, or tour the area in vehicles with four-wheel-drive (BLM 2012). Inyo County stated individuals from the State of Nevada utilize the Old Spanish Trail Highway to SR-127 then head south to Dumont Dunes driving recreational vehicles. Based on the public safety concern of oversized trucks maneuvering through the narrow widths of the Old Spanish Trail Highway with oncoming recreational vehicles and no turnouts, staff recommends Condition of Certification **TRANS-4** which requires all truck traffic utilize SR-160.

Front Sight Firearms Training InstituteTraffic

The Front Sight Firearms Training Institute (FSFTI) is located northwest of HHSEGS on approximately 550 acres within Nye County, Nevada. The FSFTI provides firearms training seven days a week. Two or four day classes are available with hours starting at 6:30 am or 8:00 am and ending at 5:00 pm or 6:00 pm. NSFTI trains approximately 30,000 students a year in a 10 month year- the facility is closed July and August.

A private road was constructed by FSFTI in 2000 to provide access to their facility. The distance from SR 160 to the private road, accessed from the Old Spanish Trail Highway, is approximately three and half miles and the private road is approximately four miles long.

Approximately 98 percent of the students use SR 160 and 2 percent use SR 127; however, not every car is a single car occupant as students tend to carpool with friends or family. Food service is provided on site which minimizes vehicle trips off-site during the day. The road was constructed in 2000 and to date has not been impassable due to rainstorms (CEC 2012aa). Based on the day shift hours (5:00 am to 3:30 pm) construction traffic and FSFTI traffic should not intersect. However, based on starting swing shift hour of 6:00 pm and the students departing from the 6:00 pm class, there may be the potential for overlap of construction traffic with the departing class. To reduce traffic impacts on Old Spanish Trail Highway, staff recommends Condition of Certification **TRANS-5,** which would require development and implementation of a traffic control plan to reduce construction traffic impacts on Old Spanish Trail Highway.

Construction Workforce Parking and Laydown Area

HHSEGS construction would require vehicle parking and laydown areas for materials delivery and storage. The proposed temporary laydown and parking area would be 180 acres on an adjacent parcel that is contiguous to the project site. Primary access to the construction and laydown area access would be from Old Spanish Trail Highway. The Manufacturing Area Construction Phase Site Plan depicts approximately 18 acres (out of the 25 acres of the fenced area) within the 180 acre temporary laydown area would provide an area for the truck route to access the manufacturing building to accommodate project construction.

The other seven acres would contain 200 craft parking spaces; 80 staff parking spaces and office trailers. Outside of the fenced area, 80 visitor parking spaces would be provided. Additional construction laydown and parking areas would also be provided at Solar Plant 1 and Solar Plant 2. The Tower Unit 1 and 2 Site Plan (C-0020 and C-0030) depicts approximately six acres of construction laydown and 300 craft parking spaces (located on 2.5 acres) which provide a total of 800 parking spaces (HHSG 2011a, App 5.15A).

Approximately 155 acres of the laydown area (remaining from the 180 acres) would be available for additional parking. Although the precise number of parking spaces and the area required for internal roadways is unknown, using the applicant's conservative assumption of 10' x 20' of area for one parking space, as shown on the Manufacturing Area Construction Phase Site Plan, the applicant would provide 6,751,800 square feet (155 acres) which would accommodate 18,600[33] (parking spaces) vehicles. Therefore, the 180 acre laydown area would be adequate to provide vehicle parking for the construction workforce.

Construction Impacts Conclusion

With implementation of the conditions of certification discussed in this analysis, construction of the HHSEGS would result in less than significant impacts to the traffic and transportation system in the vicinity of the project, specifically, State Route 160/Old Spanish Trail Highway (State of Nevada); State Route 127/Old Spanish Trail Highway (State of California, Inyo County) and State Route 127/Baker Boulevard (State of California, San Bernardino County) intersections.

Operational Impacts and Mitigation

Workforce Traffic

The project would require 100 full-time employees during project operation. Both Solar Plant 1 and Solar Plant 2 would require 30 employees and the administration office, shop and warehouse facility would require 40 employees. The plant would be operated seven days a week.

The applicant anticipates that most of the operational workforce would come from Las Vegas in Clark County and parts of surrounding rural areas in Inyo County and some may come from Pahrump in Nye County. The applicant assumed that 75 percent would

[33] (155 acres)(300 parking spaces/2.5 (acres) = 18,600 parking spaces.

come from Clark County, Nevada; 20 percent from Nye County, Nevada and 5 percent would come from Inyo County (CH2 2012jj). United Association Local 525 also expects that the operations workforce would be mostly from Las Vegas, supposing that about 80 to 85 percent would come from Clark County (CEC 2012d). The applicant estimates operational workforce would commute from their existing residences instead of moving closer to the project site. Based on the comments from United Association Local 525, staff agrees that the applicant's assumptions are reasonable.

Socioeconomics Table 7 – Housing Supply Within Two-Hour Commute of the Project Site **and Socioeconomics Table 8** – Vacancy Status Within Two-Hour Commute of the Project Site depicts that there would be an adequate housing supply in the area to accommodate the project's operational workforce if employees wanted to move closer to the project site for ease of commuting. Thus, staff agrees with the applicant's assumptions about the operations workforce and does not expect employees to relocate to the immediate project area, given the robust regional workforce.

The operation employees would generate 100 vehicle daily trips (in/out). The 200 daily one-way vehicle trips is a minimal increase to traffic volumes in the area and would have a less than significant impact on overall traffic counts, congestion, and LOS along any of the state highways, roadways, and intersections employees would use to access the project site.

Parking

As indicated earlier, the HHSEGS would employ a total of 100 full time operations staff. The facility would operate and be staffed 24 hours a day, seven days a week. As shown in Figure 2.1-3 of the AFC, HHSEGS proposes 62 parking spaces (58 for non-disabled, 4 for disabled) in the common area. As shown in Figure 2.2-1R1, Power Block Plot Plan there are 26 proposed parking spaces at each power block (24 for non-disabled, 2 for disabled).

Truck Traffic and Hazardous Materials Delivery

Operation of the HHSEGS would result in transportation of hazardous materials. Staff has addressed this issue in the **Hazardous Materials Management** section of this FSA. As presented in that section, staff believes that during construction and operation of HHSEGS, minimal amounts, small shipment sizes and types of hazardous materials (paint, cleaners, solvents, gasoline, diesel fuel, motor oil, various lubricants, hydraulic fluid, sealants, paint thinner and welding gases in standard-sized cylinders) do not pose a significant risk of either spills or public impacts along any transportation route. Therefore, staff does not recommend a specific truck route.

However, delivery of toxic materials could still be hazardous to the public if a spill were to occur. Therefore, staff recommends Condition of Certification **TRANS-6** to ensure that the project owner contracts with a licensed hazardous materials and waste hauler company that complies with all applicable regulations and obtain the proper permits and/or licenses from the California Department of Transportation (Caltrans), Nevada Department of Transportation, and Inyo County.

In addition, Condition of Certification **HAZ-3** requires the development and implementation of a Safety Management Plan for delivery of liquid hazardous materials by tanker truck. The plan shall include procedures, protective equipment requirements and also include a section describing all measures to be implemented to prevent mixing of incompatible hazardous materials. This plan shall be applicable during construction, commissioning, and operation of the power plant. For more information on the hazardous materials proposed for use during project operation and applicable regulations, see the **Hazardous Materials Management** section of this **FSA**.

Emergency Access

Staff believes that both regional and local emergency access to the HHSEGS site is adequate. Regionally, emergency vehicles could access the site using the most direct route from State Route 160 to Old Spanish Trail Highway. Refer to **Traffic and Transportation Figure 2** which depicts the primary emergency access point to the site and the secondary emergency access emergency access with crash gate. On-site circulation of emergency vehicles would be subject to site plan review by the Southern Inyo County Fire Department per conditions of certification in the **Worker Safety and Fire Protection** section of this **FSA**.

Aviation Impacts

The two solar towers would be approximately 750 feet tall and pose an obstruction hazard to aircraft. Because of the tower height, the applicant was required to notify the Federal Aviation Administration (FAA) of construction pursuant to Code of Federal Regulations Title 14, Aeronautics and Space, Part 77. These regulations require FAA notification for any proposed structure over 200 feet in height above ground level (AGL), regardless of the distance from an airport.

The HHSEGS submitted Form 7460-1 and has obtained a Determination of No Hazard to Air Navigation for Solar Tower Unit 1 (Aeronautical Study No. 2011-AWP-1954-OE) and Solar Tower Unit 2 (Aeronautical Study No. 2011-AWP-1955-OE) (CH2 2011e).

In addition, construction equipment, such as cranes that will be used during construction that are 200 feet tall or taller will require the applicant to notify the Federal Aviation Administration (FAA) pursuant to Title 14 of the Code of Federal Regulations Part 77. These regulations establish standards for determining obstructions in navigational space and sets forth requirements for notification of construction. To promote air safety and the efficient use of the navigable airspace, aeronautical studies are conducted based on information provided from FAA Form 7460-1, Notice of Proposed Construction or Alteration. These regulations require notification of the FAA for any construction feature over 200 feet in height AGL regardless of the distance from an airport, or if a proposed project structure would penetrate the navigable airspace of an airport that has a runway longer than 3,200 feet within 20,000 feet of the project structure.

Therefore, staff recommends Condition of Certification **TRANS-7** which would require the project owner to notify the FAA if the construction cranes would be 200 feet tall or taller.

As a condition to the Determination of No Hazard for Solar Tower 1 and 2, the structures must be marked/lighted in accordance with FAA Advisory Circular 70/760-1 K Change 2, Obstruction Marking and Lighting. Therefore, staff recommends Condition of Certification **TRANS-7** which would require obstruction marking and lighting of structures such as the towers and construction cranes to alert pilots to their location.

Glint and Glare

The issue from a Traffic and Transportation perspective is would the HHSEGS produce sufficient glare and/or excessive perceived brightness to either ground traffic or aviation to compromise a driver's or pilot's ability to operate his/her vehicle or aircraft.

Glint is difficulty seeing in the presence of a transient bright light source and is generally considered to be intermittent. Glare is considered as difficulty seeing in the presence of bright light such as direct or reflected sunlight or artificial light such as car headlamps at night. In **Appendix TT1-Glint and Glare**, staff concludes that glint and/or glare from the heliostats experienced by pilots would be considered as a discomfort producing effect rather than as a disability producing effect.

The glare effects from the solar receiver steam generators (SRSGs) are unavoidable and would produce a distinct visual distraction effect. However, these glare effects are not considered as sufficient to be visually debilitating and therefore, would not cause a safety hazard from an operator control perspective, such as operating a vehicle or flying a plane.

Direct solar reflections from the heliostat mirrors would produce a pronounced discomfort glare effect on any ground-based or airborne observer. This condition, in which the sun is directly reflected into an observer's eyes, should be avoided whenever possible for all heliostat operational scenarios. To reduce impacts on the reflections from the heliostat mirrors, staff recommends Condition of Certification **TRANS-8** Heliostat Operations Positioning and Monitoring Plan, which reduces the potential for direct solar reflections from the heliostat mirrors to all observers (ground-based or airborne) to an absolute minimum. Refer to **Appendix TT1** -**Glint and Glare** for a full discussion of glint and glare and the proposed Condition of Certification **TRANS-8.**

Flooding Impacts

The Federal Emergency Management Agency (FEMA) issues Flood Insurance Rate Maps (FIRM) for use in administrating the National Flood Insurance Program and for floodplain management use by local agencies to reduce the impact of flooding. FEMA map panels 06027C-4625D and 06027C-4175D cover the entire project site and show that the project site crosses into the Zone A[34] boundary in two areas: one located at the north tip of the site and the other located at the southwest corner of the site. Please see the **Soils and Surface Water** section of this **FSA** for a more detailed discussion on flooding impacts associated with the construction and operation of HHSEGS; specially **Soils and Surface Water Figure 3**.

[34] Zone A is defined by FEMA as special flood hazard area subject to inundation by the 1% annual chance flood also known as the 100-year flood (the flood that has a 1% chance of being equaled or exceeded in any given year). Because detailed analyses are not performed for Zone A, no depths or base flood elevations are shown within these zones.

As previously discussed, the Old Spanish Trail Highway borders the project site's southern boundary and based on the Zone A boundary, this boundary implies that the Old Spanish Trial Highway could experience flooding caused by large storm events. A posted sign along Old Spanish Trail Highway near HHSEGS cautions motorists of potential flooding, and residents of Charleston View have indicated during a workshop and PSA comments that flooding of the roadway occurs[35].

The extent, depths, or locations of the flooding on the Old Spanish Trail Highway is not specifically documented because Inyo County does not keep specific storm-related data. However, Inyo County's Road Department has kept records regarding the number of days a flood event occurred, and whether road repairs were necessary in order to fix flood damage. (CEC 2012ii) The applicant's preconstruction hydrology study shows that the portion of Old Spanish Trail Highway located directly adjacent to the project site is expected to flood from flows traveling northwest across the roadway. However, the applicant did not account for the effects of the perimeter fencing and landscape features, which would impede flows which could cause flooding. Refer to **Soils and Surface Water Figure 12** – Post Construction Storm Water Flow Patterns at Old Spanish Trail Highway.

To address flooding on Old Spanish Trail Highway, Soils and Water staff proposes Condition of Certification **SOILS-6** (Perimeter Drainage Management Plan). The proposed condition of certification would require the project to increase the amount of flows crossing the perimeter which would, in turn, reduce the amount of flooding and redirected concentrated flow along the shoulder of Old Spanish Trail Highway. Refer to the **Soils and Surface Water** section of this FSA for additional discussion as it relates to flooding.

COMPLIANCE WITH LORS

Traffic and Transportation Table 13 provides an assessment of the HHSEGS's compliance with applicable laws, ordinances, and regulations (LORS) pertaining to traffic and transportation.

[35] The PSA Workshop (June 14, 2012 in Pahrump, Nevada) and Supplemental Comments & Analysis submitted by Intervenor Cindy MacDonald (MAC 2012c).

TRAFFIC AND TRANSPORTATION Table 13
Project Compliance with Adopted Traffic and Transportation LORS

Applicable Law	Description	Consistency
Federal		
Code of Federal Regulations (CFR) Title 14, Aeronautics and Space, Part 77 – Objects Affecting Navigable Airspace 77.13	This regulation requires the project owner to notify the Federal Aviation Administration (FAA) of construction structures with a height greater than 200 feet from grade or greater than an imaginary surface extending outward and upward at a slope of 100 to 1 from the nearest point of the nearest runway of an airport with at least one runway more than 3,200 feet in length.	The project would be consistent with this regulation with the inclusion of Conditions of Certification**TRANS-7.**
Code of Federal Regulations (CFR) Title 49 Subtitle B, Parts 171-173, 177-178, 350-359, 397.9 and Appendices A-G	Requires proper handling and storage of hazardous materials during transportation.	The project would be consistent with this regulation with the inclusion of Condition of Certification **TRANS-6.**
State		
California Vehicle Code, sections 13369, 15275, 15278	Requires licensing of drivers and the classification of license for the operation of particular types of vehicles. A commercial driver's license is required to operate commercial vehicles. An endorsement issued by the Department of Motor Vehicles (DMV) is required to drive any commercial vehicle identified in Section 15278.	The project would be consistent with this regulation with the inclusion of Condition of Certification**TRANS-1.**
California Vehicle Code, sections 31303-31309	Requires transportation of hazardous materials to be on the state or interstate route that offers the shortest overall transit time possible.	The project would be consistent with this regulation with the inclusion of Condition of Certification**TRANS-6.**
California Vehicle Code, Sections 31600-31620	Regulates the transportation of explosive materials.	The project would be consistent. The HHSEGS would not use explosive materials as defined in Section 12000 of the Health and Safety Code.
California Vehicle Code, sections 32100-32109	Requires shippers of inhalation hazards in bulk packaging comply with rigorous equipment standards, inspection requirements, and route restrictions.	The project would be consistent with this regulation with the inclusion of Condition of Certification **TRANS-6**.
California Vehicle Code, sections 34000-34100	Establishes special requirements for vehicles having a cargo tank and for hazardous waste transport vehicles and containers, as defined in Section 25167.4 of the Health and Safety Code.	The project would be consistent with this regulation with the inclusion of Condition of Certification **TRANS-6.**
California Vehicle Code, section 35550	Regulates weight guidelines and restrictions upon vehicles traveling on freeways and highways. A single axle load shall not exceed 20,000 pounds,	The project would be consistent with this regulation with the inclusion of Condition of Certification **TRANS-1**.

Applicable Law	Description	Consistency
	the load on any one wheel or wheels supporting one end of an axle is limited to 10,500 pounds.	
California Vehicle Code, section 35551	Defines the maximum overall gross weight as 80,000 pounds and mandates that the gross weight of each set of tandem axles not exceed 34,000 pounds.	The project would be consistent with this regulation with the inclusion of Condition of Certification **TRANS-1**.
California Vehicle Code, Section 35780	Requires a single-trip transportation permit to transport oversized or excessive loads over state highways.	The project would be consistent with this regulation with the inclusion of Condition of Certification **TRANS-1.**
California Health and Safety Code, section 25160	Addresses the safe transport of hazardous materials	The project would be consistent with this regulation with the inclusion of Conditions of Certifications **TRANS-1** and **TRANS-6.**
Nevada Administrative Code – Hazardous Materials, Chapter 459, section 459.9785	Lists prerequisites to transportation of hazardous materials for which federal safety permit is required.	The project would be consistent with this regulation with the inclusion of Condition of Certification **TRANS-6**.
Nevada Administrative Code – Hazardous Materials, Chapter, section 459.986	Requires Inspection of vehicles; verification of drivers' qualifications.	The project would be consistent with this regulation with the inclusion of Condition of Certification **TRANS-1**.
Nevada Administrative Code-Traffic Laws, section 484.500	Requires a transportation permit for the operation of an oversized or overweight vehicle to travel a determined route with a designated load for a designated period.	The project would be consistent with this regulation with the inclusion of Condition of Certification **TRANS-1**.
Local		
Inyo County Regional Transportation Plan: Goal 2: A Transportation system which is safe, efficient and comfortable which meets the needs of people and goods and enhances the lifestyle of the county's residents.	Objective 2.1: Maintain and Improve Roadway Level of Service – Maintain or improve existing Level of Service on roadways within the county. Policy 2.2.1: Proper access – Provide proper access to residential, commercial and industrial areas.	The project would be consistent with this policy with the inclusion of Condition of Certification **TRANS-2.**

Applicable Law	Description	Consistency
Inyo County Regional Transportation Plan: Goal 3: Maintain adequate capacity on State Routes (SR's) and Local Routes in and Surrounding Inyo County and the City of Bishop.	Objective 3.3: Improve County routes. Policy 3.3.1 : Support roadway improvements to optimize public safety – Improve county roads through specific safety improvements and maintenance.	The project would be consistent with this policy with the inclusion of Conditions of Certification **TRANS-2 and TRANS-3.**
Section 7.2.4 Roadways and Highways - Policy RH-1.4 Level of Service	Maintain a minimum of Level of Service (LOS) "C" on all roadways in the County of Inyo. For highways within the County of Inyo, LOS "C" should be maintained except where roadways expansion or reconfigurations will adversely impact the small community character and economic viability of designated Central Business Districts.	The project would be consistent with this policy with the inclusion of Condition of Certification **TRANS-2** and **TRANS-5.**
Section 7.2.4 Roadways and Highways Policy RH-1.5 Proper Access	Provide proper access to residential, commercial and industrial uses.	The project would be consistent with this policy with the inclusion of Condition of Certification **TRANS-2**.
Section 7.2.4 Roadways and Highways Policy RH-1.6 Minimize Environmental Impacts	Ensure that all transportation projects minimize adverse effects on the environment of the County.	The project would be consistent with this policy with the inclusion of Conditions of Certification **TRANS-1**, **TRANS-2, TRANS-3, TRANS-4 and TRANS-6 and TRANS-8.**
County of San Bernardino General Plan – Desert Region Goals and Policies of the Circulation and Infrastructure Element - Section IV- Goal D/CI 1 – Ensure a safe and effective transportation system that provides adequate traffic movement while preserving the rural desert character of the region.	Policy D/CI 1.14 – Ensure the County implements a traffic evaluation and monitoring program.	The project would be consistent with this regulation with the inclusion of Condition of Certification **TRANS-5.**

CUMULATIVE IMPACTS

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (Cal. Code Regs. tit 14,§15065(a)(3).

Traffic Impacts

Staff reviewed known past, current, and probable future projects in the vicinity of the proposed HHSEGS project. The location of the overall projects identified within California and Nevada with respect to HHSEGS is shown in **Traffic and Transportation Figure 7.**

Traffic and Transportation Table 14 lists the known projects from the master cumulative list that could have overlapping construction schedule with HHSEGS.

Traffic and Transportation Table 14
Cumulative Projects

ID #	Project Name	Project Description and Status	Peak Construction Workers	Operation Workers	Construction Begins	Construction Ends
	HHSEGS		**2,293**	**100**	**1st Qtr 2013**	**1st Qtr 2015**
A	St. Therese Mission – State of California	17.5 acre environmental park, memorial and internment center located at 881 E. Old Spanish Trail Highway, 1.5 miles west of HHSEGS. Project approved June 23, 2010 – Conditional Use Permit #2010-02.	6	Unknown	In Construction	2014
F	Silver State South Solar (NVN 089530,NV N 085801) – State of Nevada	350 MW Solar PV Project located on 2,900 BLM land; Record of Decision 10/12/10.	230-400	70-100	3rd Qtr 2012	4th Qtr 2014
G	Stateline Solar Farm – State of California	300 MW Solar PV	500	7-10	4th Qtr 2013	4th Qtr 2015
I	Searchlight Wind Energy – State of Nevada	200 MW wind energy facility on 18,949 acres of both BLM and private land.	250-300		2012	2013
J	Southern Owens Valley Solar Ranch – State of California	200 MW of PV on 3,100 acres in southern Owens Valley; Draft Environmental Impact Statement in preparation.	300	10	3rd Qtr 2012	3rd Qtr 2015
N	Hidden Hills Valley Electric Transmissi on (NVN	10 acre BSE Tap 230/500 kV Substation; Draft Environmental	66		4th Qtr 2012	1st Qtr 2015

	089669) – State of Nevada	Impact Statement pending.				
O	Calnev Pipeline Expansion – State of Nevada	16-inch diameter pipeline from an existing facility in Colton, California to an existing facility in Las Vegas, Nevada.	550-650	0	2012	2013/1014
	Total		**2,929-3,249**	**207-240**		

Source: US BLM 2012a, US BLM 2012b, US BLM 2012c, LADWP 2010

Traffic trips generated by the construction and/or operation of nearby projects could combine with traffic generated by HHSEGS to result in cumulative impacts to level of service (LOS) of nearby highways, intersections and roadways. Cumulative impacts would be a concern during construction of HHSEGS, but not during operations.

HHSEGS operations would generate a maximum of 200 daily vehicle trips, a minimal increase in traffic that would have a less than significant impact on overall traffic counts. Therefore, staff only evaluated cumulative impacts during HHSEGS construction.

Regional Impacts During Construction

Several proposed projects shown on **Traffic and Transportation Figure 7** have the potential to result in increased congestion on I-15 and SR-160 within the State of Nevada and only one project would utilize Old Spanish Trail Highway within both California and Nevada. These projects include St. Therese Mission, State Line Solar Farm, Silver State South Solar Project, CalNev Pipeline Expansion and Hidden Hills Valley Electric Transmission Project.

St. Therese Mission Project

The St. Therese Mission Project (Mission) would be constructed concurrently with the HHSEGS, and is the only identified cumulative project to also utilize Old Spanish Trail Highway. The Mission would average six construction employees .and it is anticipated approximately 1,200 visitors per month would visit the site or an average visitor count of 40 per day.

Silver State South Solar Project

The Silver State South Solar Project (SSSSP) would involve the development of a 350 MW solar energy facility on approximately 2,900 acres of BLM land. The site is located in a largely undeveloped area and, therefore, major transportation routes are limited. Traffic routes within the project site are limited to unpaved OHV roads, trails, and dry washes. I-15 would provide indirect access to SSSSP from the urban centers of Southern California, such as San Diego and the greater Los Angeles area from the south, and Salt Lake City and Las Vegas from the north. East Primm Boulevard provides east-west direct access from I-15, South Las Vegas Boulevard/Nevada State Route (SR) 604, and Desert Arena Drive.

State Line Solar Project

The State Line Solar Project proposes a 300-megawatt (MW) alternating current (AC) solar photovoltaic (PV) energy generating project. The PV generating facility (Solar Farm), the corridor for the Project's 220-kilovolt (kV) generation interconnection (gen-tie) transmission line, and the access road would be located on Federal lands managed by the U.S. Department of Interior, Bureau of Land Management (BLM).The Proposed Solar Farm would be approximately 2 miles south of the California-Nevada border and 0.5 mile west of I-15 in eastern San Bernardino County.

CalNev Pipeline Expansion

The Calnev Pipeline Expansion Project would involve the construction, operation, and maintenance of a new 16-inch-diameter pipeline and ancillary facilities from an existing facility in Colton, California to an existing facility in Las Vegas, Nevada. The new pipeline would extend approximately 233 miles from the existing North Colton Terminal in Colton, San Bernardino County, California to the Bracken Junction near the McCarran International Airport in Las Vegas, Nevada. The Calnev Project roughly parallels Interstate 15 (I-15) from Colton to just outside Las Vegas. During peak construction approximately 550-650 employees would be required. The DEIS stated that pipeline construction generally proceeds at rates ranging from several hundred feet to one mile per day and the activities could last from one week to 30 days. Based on the construction moves through an area quickly, traffic impacts would generally be localized, intermittent and short term.

BLM has proposed MM TRAN-1: Traffic Management Plan requiring the Applicant to develop a Traffic Management Plan for locations along the route where local agencies (e.g., traffic engineering, public works, etc.) identify construction activities that would adversely impact the existing transportation system. Where requested by public agencies, the use of flaggers, warning signs, lights, barricades, cones, etc. would be implemented according to standard guidelines required by the affected jurisdiction.

Valley Electric's Hidden Hills Transmission Project

Valley Electric Association (VEA) has requested a new right-of-way (ROW) authorization from the Bureau of Land Management (BLM) for the construction, operation, maintenance, and termination of transmission infrastructure improvements in Pahrump and Sandy valleys to Jean, Nevada, and terminating at Eldorado Substation near McCullough Pass. This project would provide the system improvements necessary to support the development and delivery of the 500 MW generated by HHSEGS into the VEA.

Cumulative Impacts Conclusion

The total peak construction workers for the identified projects would be approximately 1,622. The only project that would utilize SR 160, and would be heavily impacted by the HHSEGS construction, would be the St. Therese Mission which is currently under construction and has identified 40 daily commercial trips.

The remaining projects, would utilize various section of I-15 and unlikely to overlap with the HHSEGS peak construction month. Therefore, the HHSEGS would not combine

with any past, current, or probable future projects to result in significant cumulative impacts to ground traffic within the State of California or State of Nevada on the nearby traffic and transportation system.

NOTEWORTHY PUBLIC BENEFITS

While the development of the proposed project is intended to address the requirements of federal and state mandates to develop renewable energy, it would not yield any noteworthy public benefits related to traffic and transportation.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Traffic and Transportation comments were submitted by several individuals and organizations following the May 24, 2012 publication of the Preliminary Staff Assessment (PSA), including access and circulation concerns from Inyo County (INYO 2012h). Staff has addressed all comments, which can be reviewed in **Appendix 1 – PSA Response to Comments, Traffic and Transportation.**

CONCLUSIONS

Staff has analyzed the proposed HHSEGS's impacts to the nearby traffic and transportation system. With implementation of the proposed conditions of certification listed below, the HHSEGS would comply with all applicable LORS related to traffic and transportation and would result in less than significant impacts to the traffic and transportation system.

Staff concludes that with mitigation from recommended Conditions of Certification **TRANS-1**, **TRANS-2**, **TRANS-3**, **TRANS-4, TRANS-5**, **TRANS-6 , TRANS-7** and **TRANS-8**, the construction and operation of the Hidden Hills Solar Electric Generating System project would not result in significant traffic and transportation impacts, according to the California Environmental Quality Act (CEQA) Guidelines.

Socioeconomics Figure 1 and **Socioeconomics Table 2** do not identify the presence of an environmental justice community. Therefore, the population in the six-mile buffer does not constitute an environmental justice population as defined by *Environmental Justice: Guidance Under the National Environmental Policy Act* and would not trigger further scrutiny for purposes of an environmental justice analysis. For more details, please see the **Socioeconomics** section of the **FSA**.

PROPOSED FINDINGS OF FACT

Based on the evidence, staff proposes the following findings and concludes as follows:

1. Project construction would occur over 29 months.

2. Project construction and operation would add additional automobile and vehicle traffic to the roads in the project region.

3. Currently, the roads in the project region are operating at a Level of Service (LOS) C or above.

4. The additional amounts of traffic attributable to the project construction would decrease existing Levels of Service (LOS) on the region's roads and highways.

5. The Old Spanish Trail Highway in the vicinity of the project could be substantially damaged by project-related heavy truck traffic.

6. Traffic and transportation impacts resulting from HHSEGS during the construction phase would be significant.

7. Traffic and transportation impacts resulting from HHSEGS during the operation phase would be less than significant.

8. Based on the HHSEGS's distance from the nearest airport, the project would not have an impact to aviation safety.

9. Based on the HHSEGS's distance from the nearest rail and nationwide bus service, the project would not have an impact to these forms of transportation.

10. Project-related traffic impacts in combination with the effects of past, present and reasonable foreseeable projects in the Pahrump Valley would not be cumulatively considerable on the traffic and transportation systems in the State of California or State of Nevada.

11. With Conditions of Certification the HHSEGS would not result in significant direct, indirect or cumulative traffic and transportation impacts.

PROPOSED CONDITIONS OF CERTIFICATION

TRANS-1 Roadway Use Permits and Regulations

The project owner or its contractor(s) shall comply with limitations imposed by the Department of Transportation (Caltrans) District 8 and 11 and other relevant jurisdictions, including Nevada Department of Transportation (NDOT) and Inyo County, on vehicle sizes and weights, driver licensing, and truck routes. In addition, the project owner or its contractor(s) shall obtain necessary transportation permits from all relevant jurisdictions for roadway use.

Verification: In the Monthly Compliance Reports (MCRs), the project owner shall report permits received during that reporting period. In addition, the project owner shall retain copies of permits and supporting documentation on-site for Compliance Project Manager (CPM) inspection if requested.

TRANS-2 Right-of-Way

The project owner shall dedicate to the County of Inyo 24 feet of right-of-way along Old Spanish Trail Highway to ensure adequate turn lanes and acceleration/deceleration lanes for construction traffic. Prior to the peak daily

truck deliveries, the project owner shall have constructed the turn lanes and acceleration/deceleration lanes for construction traffic.

Verification: At least 90 days prior to start of site mobilization, the project owner shall provide evidence to the CPM that the dedication of right-of-way has been accepted and recorded by Inyo County; detailed construction plans that will identify improvements along Old Spanish Trail Highway and at the project entry points for review and comment by Inyo County and the CPM for review and approval. Prior to the peak daily truck deliveries (Month 6), the project owner shall have constructed the turn lanes and acceleration/deceleration lanes for construction traffic.

TRANS-3 Restoration of All Public Roads, Easements, and Rights-of-Way

The project owner shall coordinate with Inyo County to restore all public roads, easements, and rights-of-way that have been damaged due to project-related construction activities. This includes Old Spanish Trail Highway from the intersection of SR 127 to the intersection of SR 160. Restoration of significant damage which could cause hazards (such as potholes or deterioration of the pavement edges, damaged signage) must take place immediately after the damage has occurred. The restoration shall be completed in a timely manner to the road's original condition in compliance with the applicable jurisdiction's specifications.

Verification: Prior to the start of site mobilization, the project owner shall photograph or videotape all of the affected public roads, easements, right-of-way segment(s), and/or intersections. This includes all portions of Old Spanish Trail Highway from the intersection of SR 127 (Sate of California) to the intersection of SR 160 (State of Nevada). The project owner shall provide the photograph or videotape to the CPM and the affected jurisdictions (California Department of Transportation (Caltrans), Nevada Department of Transportation (NDOT), and Inyo County). The purpose of this notification is to request that these jurisdictions consider postponement of any planned public right-of-way repair or improvement activities in areas affected by project construction until construction is completed, and to coordinate any concurrent construction-related activities that cannot be postponed.

If damage to public roads, easements, or rights-of-way is identified by the project owner or the affected jurisdiction, the project owner shall immediately notify the CPM and the affected jurisdiction(s) to identify the section of the public right-of-way to be repaired. At that time, the project owner shall establish a schedule for completion and approval of the repairs. Following completion of any public right-of-way repairs, the project owner shall provide the CPM letters signed by the person authorized to accept the repairs in the affected jurisdiction(s) stating their satisfaction with the repairs.

TRANS-4 Truck Route

The project owner shall require all construction truck traffic use State Route 160 for all access to and from the project site. Throughout the construction and operation of the project, the project owner shall document, investigate, evaluate, and resolve all project truck related complaints. The project owner or authorized agent shall:

- Provide a spotter (an individual, such as a security guard, to monitor truck traffic) to ensure all construction truck traffic does not utilize Old Spanish Trail Highway via State Route 127;
- Use the Traffic Complaint Resolution Form (below), or a functionally equivalent procedure acceptable to the CPM, to document and respond to each traffic complaint of construction truck traffic using Old Spanish Trail Highway west of the project site;
- Attempt to contact the person(s) making the traffic complaint within 24 hours;
- Conduct an investigation to determine the transportation company in the complaint and;
- Submit a report documenting the complaint and actions taken.

  The report shall include: a complaint summary, including the final resolution and, if obtainable, a signed statement by the complainant stating that the truck route problem has been resolved to the complainant's satisfaction.

Verification: The project owner shall include this specific route in its contracts for truck deliveries and provide the CPM with a copy of the transmittal letter to the contractors specifying the truck route.

Within five days of receiving a truck route complaint, the project owner shall file a Traffic Complaint Resolution Form, shown below, with the CPM that documents the resolution of the complaint.

TRANS-5 Traffic Control Plan, Heavy Hauling Plan, and Parking/Staging Plan

The project owner shall prepare and implement a Traffic Control Plan (TCP) for the HHSEGS's construction and operations traffic. The TCP shall address the movement of workers, vehicles, and materials, including arrival and departure schedules and designated workforce and delivery routes.

The project owner shall consult with the Department of Transportation (Caltrans) District 8 Office; Department of Transportation (Caltrans) District 9 Office; Nevada Department of Transportation (NDOT); Inyo County; County of San Bernardino; Clark County and Nye County in the preparation and implementation of the Traffic Control Plan (TCP). The project owner shall submit the proposed TCP to Caltrans District 8, 9, NDOT, Inyo County; County of San Bernardino; Clark County and Nye County in sufficient time for review and comment, and to the CPM for review and approval prior to the proposed start of construction and implementation of the plan. The Traffic Control Plan (TCP) shall include:

- Provisions for redirection of construction traffic with a flag person as necessary to ensure traffic safety and minimize interruptions to non-construction related traffic flow;

- Placement of necessary signage, lighting, and traffic control devices at the project construction site and lay-down areas;
- A heavy-haul plan addressing the transport and delivery of heavy and oversized loads requiring permits from the California Department of Transportation (Caltrans), Nevada Department of Transportation (NDOT) other state or federal agencies, and/or the affected local jurisdictions;
- Location and details of construction along affected roadways at night, where permitted;
- Temporary closure of travel lanes or disruptions to street segments and intersections during construction activities;
- Traffic diversion plans (in coordination with the County of Inyo, Caltrans, NDOT; County of San Bernardino; Clark County and Nye County) to ensure access during temporary lane/road closures;
- Access to residential and/or commercial property located near construction work and truck traffic routes;
- Ensure access for emergency vehicles to the project site;
- Advance notification to residents, businesses, emergency providers, hospitals, school districts, such as the Death Valley Unified School District, and the Front Sight Firearms Training Institute that would be affected when roads may be partially or completely closed;
- Visual monitoring of the LOS at the study intersections (SR 160/Old Spanish Trail Highway; SR 127/Old Spanish Trail Highway, and SR 127/Baker Boulevard) by the project owner's representative shall occur once per week, during the morning and afternoon peak hour during peak construction months. Monitoring would begin in Month 12 when 1,176 workers are projected (approximately 51 percent of the peak) and continue through the end of Month 24 when 1,293 workers are projected (approximately 56 percent of the peak). The findings shall be reported monthly to the CPM in the monthly compliance report or as necessary;
- The following measures shall be implemented when the traffic monitoring identifies LOS E conditions at the intersection of SR 160/Old Spanish Trail Highway; LOS D conditions at SR 127/Old Spanish Trail Highway; LOS F conditions at SR 127/ Baker Boulevard:
    - A work schedule and end-of-shift departure plan that would stagger Monday arrivals and Friday departures from the project site;
    - Carpooling - Club Ride Program sponsored by the Regional Transportation Commission of Southern Nevada and;
    - Employer Sponsored Van Program designed to transport construction workers to the project site via a van or bus service. 15-passenger vans shall be used to achieve a baseline carpool rate of 1.5 people per car for the California workforce and the higher carpool rate of 2.5 people per car

when the day shift workforce reaches 1,000 employees shall be required.

- Identification of safety procedures for exiting and entering the site access gate;
- Parking/Staging Plan (PSP) for all phases of project construction and for project operation.

For any activity on public roads, the project owner shall apply for, receive and comply with all conditions of an encroachment permit from the affected jurisdiction.

Verification: At least 60 calendar days prior to the start of construction, the project owner shall submit the TCP to the applicable agencies for review and comment and to the CPM for review and approval. The project owner shall also provide the CPM with a copy of the transmittal letter to the agencies requesting review and comment and a copy of the encroachment permit issued by the affected agency for any activities on a public road.

At least 30 calendar days prior to the start of construction, the project owner shall provide copies of any comment letters received from the agencies, along with any changes to the proposed development plan, to the CPM for review and approval.

TRANS-6 Transportation of Hazardous Materials

The project owner shall contract with licensed hazardous material delivery and waste hauler companies in order to obtain the necessary permits and/or licenses from the California Highway Patrol, the California Department of Transportation (Caltrans), Nevada Department of Transportation, and any relevant local jurisdictions for the transportation of hazardous materials. The project owner shall ensure compliance with all applicable regulations and implementation of the proper procedures and the deliveries shall only use State Route 160 to the project site.

Verification: In the Monthly Compliance Reports (MCRs) during construction and the Annual Reports during operation, the owner shall provide copies of all permits/licenses obtained for the transportation of hazardous substances.

At least 30 calendar days prior to the start of construction, the project owner shall provide copies of any comment letters received from the agencies, along with any changes to the proposed development plan, to the CPM for review and approval.

TRANS-7 Federal Aviation Administration Notification of Construction Cranes and Obstruction Marking and Lighting

The project owner shall install obstruction marking and lighting on the two solar power towers and any construction cranes exceeding 200 feet in height consistent with FAA requirements, as expressed in the following documents:

- FAA Advisory Circular 70/7460-1K
- FAA Safety Alert for Operators (SAFO) 09007.

Permanent lighting consistent with all requirements shall be installed and activated within 5 days of completion of construction and prior to operation of the HHSEGS. Lighting shall be operational 24 hours a day, 7 days a week for the life of project operation. Upgrades to the required lighting configurations, types, location, or duration shall be implemented consistent with any changes to FAA obstruction marking and lighting requirements.

The project owner shall file a Form 7460-1 with the Federal Aviation Administration (FAA) regarding the use of 200 feet tall construction cranes.

Verification: At least 60 days prior to the start of construction, the project owner shall submit to the CPM for approval final design plans for the two solar towers that depict the required air traffic obstruction marking and lighting.

Within 5 days of completion of the solar power tower construction and prior to plant operation, the project owner shall install and activate permanent obstruction marking and lighting consistent with FAA requirements and shall inform the CPM in writing within 10 days of installation and activation. The lighting shall be inspected and approved by the CPM (or designated inspector) within 30 days of activation.

At least 90 days prior to ground disturbance, the project owner shall submit a copy of the FAA Determination of No Hazard to Navigable Airspace regarding the construction cranes to the CPM.

TRANS-8 Heliostat Operations Positioning and Monitoring Plan

The project owner shall prepare and implement a Heliostat Operations Positioning and Monitoring Plan (HPMP) that would avoid human health and safety hazards and accomplish the following:

- *Safe orientation as default orientation* – heliostats default to the safe orientation common to the whole field in all cases of malfunctions detected by the heliostat's controller, which ensures protection in most cases of malfunctions;
- *Safe path from any orientation to any other orientation* – when heliostats change their orientation, they choose a "path" which avoids reflected sunrays on all unintended areas (at least the tower and power block, and other designated sensitive areas). Safe path orientation includes normal repositioning operations as well as any contingency repositioning operations (such as during excessive high winds) which may required.
- *Normal operation* - all the sunlight is reflected either on the receiver or the "standby" areas – located near the receiver – so that no other location receives solar radiation.

Verification: At least 90 days prior to commercial operation of any of the two HHSEGS Solar Receiver Steam Generators, the project owner shall submit the Heliostat Positioning and Monitoring Plan to the CPM for review and approval. The project owner shall also submit the plan to the Federal Aviation Administration (FAA) for review and comment and forward any comments received to the CPM. The project owner shall not test or operate the project until the HPMP is approved by the CPM.

Traffic Complaint Resolution Form

Hidden Hills Solar Electric Generating System (11-AFC-2)
COMPLAINT LOG NUMBER _____ **Complainant's name and address:** **Phone number:** _____
Date complaint received: _____ **Time complaint received:** _____
Nature of truck route complaint:
Definition of problem after investigation by plant personnel: **Date complainant first contacted:** _____
Description of corrective measures taken: **Complainant's signature:** _____ **Date:** _____
Date first letter sent to complainant: _____ **(copy attached)** **Date final letter sent to complainant:** _____ **(copy attached)**
This information is certified to be correct: **Plant Manager's Signature:** _____

(Attach additional pages and supporting documentation, as required).

REFERENCES

BLM 2012 – Bureau of Land Management - Dumont Dunes Off-Highway Vehicle Area website http://www.blm.gov/ca/st/en/fo/barstow/dumont.html accessed 5/12/12.

CCTE 2008 – Clark County Transportation Element, Adopted July 16, 2003, Last Amendment December 3, 2008.

CEC 2012d – California Energy Commission/L. Worrall (tn: 63485) Report of Conversation with J. Orr, Local 525. 01/23/2012.

CEC 2012I – California Energy Commission/M. Monasmith (tn: 63867) Report of Conversation w/ Anthony Parisi re: Military Operations. 2/27/2012.

CEC 2012n – California Energy Commission/M. Monasmith (tn: 63905) Report of Conversation w/ Candace Hill and CH2MHILL with L. Valdez re: LOS. 3/01/2012

CEC 2012r – California Energy Commission/M. Monasmith (tn:65224) Report of Conversation w/Candace Hill regarding Bus Stop schedule. 5/15/2012

CEC 2012 v – California Energy Commission/M. Monasmith (tn: 65071) Report of Conversation with CEC's Candace Hill and Kent Sears of Nevada Department of Transportation Regarding State Route 160 - State of Nevada. 5/4/2012.

CEC 2012aa – California Energy Commission/M. Monasmith (tn: 66525) Report of Conservation Candace Hill and Mike Meacher COO of Front Site. 8/08/2012.

CEC 2012gg – California Energy Commission/M. Monasmith (tn: 67623) Record of Conversation between Candace Hill and Caltrans re:Traffic Monitoring Program, Traffic Control Program, Surface Restoration. 10/09/2012

CEC 2012hh – California Energy Commission/C. Hill (tn: 67693) Record of Conversation with Candace Hill and Ed Petre re: Updated Workforce Analysis - Traffic Implications for San Bernardino County. 10/11/2012

CEC 2012ii – California Energy Commission/M. Monasmith (tn: 67868) Record of Conversation with Candace Hill and D. Crom re flooding on Old Spanish Highway/Tecopa Road. 8/31/2012.

CEC 2012kk – California Energy Commission/M. Monasmith (tn: 68001) Record of Conversation, S. Kerr and D. Crom re: Inyo County Public Works. 10/23/2012.

CEC 2012ll – California Energy Commission/M. Monasmith (tn: 68367) Candace Hill email re: traffic issues, Baker, CA. 11/05/2012

CDOT 2012 – California Department of Transportation, Structure Maintenance and Investigations – California Log of Bridges on State Highways District 8, April 2012.

CDOT 2011 - California Department of Transportation - State Route 127 Transportation Concept Report, District 9, Office of System Planning, October 2011.

CH2 20011e- CH2MHill/J. Carrier (tn 62913) Applicant's Data Response 1A. 11/16/2011.

CH2 2012d – CH2MHill/J. Carrier (tn 63635) Applicant's Data Response Set 2A – Boiler Optimization Plan and Design Change 2/16/2012.

CH2 2012ee – CH2MHill/J. Carrier (tn: 66319) Applicant's PSA Comments, Set 2. 7/23/2012.

CH2 2012jj– CH2MHill/J. Carrier (tn: 67434) Applicant's Updated Workforce Analysis. 10/01/2012.

CH2 2012rr—CH2MHILL/ L. Valdez (tn 68877) Technical Memo State Route 127/ Baker Boulevard Intersection Analysis dated, December 10, 2012. Submitted to CEC Dockets Unit on December 13, 2012.

CSB 2007 – County of San Bernardino 2007 General Plan – Introduction and Circulation and Infrastructure Element.

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Appendix TT 1
Glint and Glare Safety Impact Assessment
Hidden Hills Solar Electric Generating System
Gregg Irvin, Ph.D.

INTRODUCTION

The Hidden Hills Solar Electric Generating(System (HHSGS) would be located on Old Spanish Highway, near the community of Charleston View on approximately 3,277 acres (5.12 square miles) of privately owned land in Inyo County, California, adjacent to the Nevada border. The project site is approximately 18 miles south of Pahrump, Nevada, and approximately 45 miles west of Las Vegas, Nevada.

Each solar plant would use heliostats which are elevated mirrors guided by a tracking system mounted on a pylon to focus the sun's rays on a solar receiver steam generator (SRSG) atop a 750-foot tall solar power tower near the center of each solar field. In each solar plant, one Rankine-cycle steam turbine would receive steam from the SRSG (or solar boiler) to generate electricity. The solar field and power generation equipment would start each morning after sunrise and, unless augmented, would shut down when insolation[1] drops below the level required keeping the turbine online.

Each of the heliostat assemblies would be composed of two mirrors, each approximately 12 feet high by 8.5 feet wide with a total reflecting surface of 204.7 square feet. Each heliostat assembly would be mounted on a single pylon, along with a computer-programmed aiming control system that directs the motion of the heliostat to track the movement of the sun. The solar field for each solar plant would consist of approximately 85,000 heliostats.

Definition of Glint and Glare

Glare is considered as difficulty seeing in the presence of bright light such as direct or reflected sunlight or artificial light such as car headlamps at night. Glare is caused by a significant ratio of luminance between the task (that which is being looked at) and the glare source. Factors such as the angle between the task and the glare source and eye adaptation have significant impacts on the experience of glare. Glare can be generally divided into two types, discomfort glare and disability glare. Discomfort glare results in an instinctive desire to look away from a bright light source or difficulty in seeing a task. Disability glare renders the task impossible to view, such as when driving westward at sunset. Disability glare is often caused by the inter-reflection of light within the eyeball, a scattering effect, reducing the contrast between task and glare source to the point where the task cannot be resolved or distinguished.

Glint is difficulty seeing in the presence of a transient bright light source and is generally considered to be intermittent. A glint effect would be, for example, brief reflections of sky or sunlight from of the heliostats while driving by. A glare effect is more sustained, such as might be present from the sustained reflections from the tower SRSGs.

[1] Defined as "exposure to the sun's rays."

Both glint and glare effects are possible from both the redirection of sunlight by the heliostats and the reflection of solar energy off of the solar tower SRSGs. Because of the possible impact of this redirected sunlight on observers such as motorists on the adjacent highway or in aircraft overhead, these impacts are analyzed below.

METHODOLOGY AND THRESHOLDS FOR DETERMINING SIGNIFICANT IMPACTS OF GLINT AND GLARE

The Luminance of the Hidden Hills Environment

Perceived brightness depends on a variety of factors including the luminance of the global ambient, target size and the relationship between the luminance of the target and background. The global ambient luminance sets the state of visual adaptation and hence the spatial and temporal processing characteristics of the human visual system. Within this context perceived brightness depends critically on the luminance relationship and sizes of the target (SRGS) and background (sky). The irradiance of the sun is enormous, on the order of 80,000 Watts (W)/m^2. As such, the luminance of the sun is also enormous and is on the order of $1.6x10^9$ cd/m^2 (candelas per meter squared) on a clear day at noon.

Irradiance is a measure of the power incident on a surface, also called radiant flux density, and is expressed as Watts/cm^2. Irradiance characterize the total amount of radiation present, at all frequencies, and is the appropriate metric for the determination of retinal damage thresholds. The human visual system, however, is only sensitive to a narrow range of these frequencies described by the photopic luminous efficiency function ($V\lambda$). Luminance, on the other hand, is a photometric measure of the luminous intensity per unit area of light. Luminance indicates how much luminous power will be detected by an eye looking at source or surface from a particular angle of view. Luminance is thus an indicator of how bright the surface will appear. Luminance can be computed from an irradiance spectrum by using the photopic luminous efficiency function which describes the average visual sensitivity of the human eye to light of different wavelengths. It is a standard function established by the Commission Internationale de I'Eclairage (CIE) and is used to convert radiant energy into luminous (i.e., visible) energy.

The luminance of the sky varies considerably dependent on weather conditions and can range from 500 cd/m^2 to approximately 7,000 cd/m^2. Of the total light removed from the direct solar beam by scattering in the atmosphere (approximately 25%) about two-thirds ultimately reaches the earth as diffuse sky radiationEmpirical measurements were made at the Rio Mesa site of both the solar and sky spectral irradiance distributions on 18 April 2012 under clear full sun conditions. The Rio Mesa site is similar to the Hidden Hills site and the solar and sky measurements taken are considered as applicable to Hidden Hills. Measurements were accomplished with a calibrated Ocean Optics spectroradiometer with a 400 μm fiber optic for light collection. Since the sun subtends a smaller angle than the acceptance numerical aperture of the fiber the sun measurements, of necessity include both sun and sky spectra combined.
The sky measurements are accurate and provided consistent measurements. Measurements taken, at elevations commensurate with the viewing conditions in which the sky would constitute the visual background for tower SRSG, yielded average values for integrated radiance of 40.33 W/m^2-sr. When the standard human luminous efficiency function is applied to these spectral measurements the computed luminance values are 6,175 cd/m^2 ± 222 cd/m^2. **Figure 1** shows an example of the measured sky spectrum (normalized) over the range of human visual sensitivity (blue). Also shown is the CIE Vλ photopic luminous efficiency function (green) depicting relative visual sensitivity over the wavelength range of 360-830 nm.

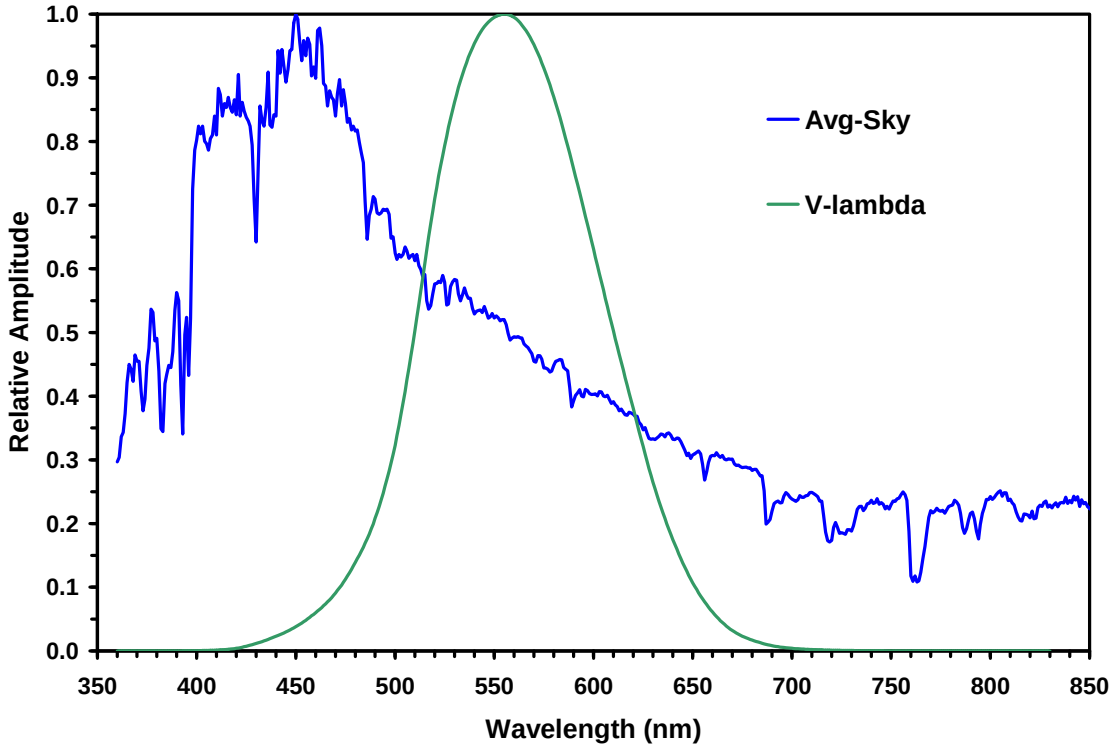


Figure 1 Normalized Sky spectral radiance (W/cm^2-sr) resulting in a luminance of 6,157 cd/m^2 (Dominant wavelength 478 nm, Purity 28.5).

Reference Solar Spectral Irradiance: Air Mass 1.5

The photovoltaic (PV) industry, in conjunction with the American Society for Testing and Materials (ASTM) (http://www.astm.org/) and government research and development laboratories developed and defines two, and only two, standard terrestrial solar spectral irradiance distributions. The two spectra define a standard direct normal spectral irradiance and a standard total (global, hemispherical, within 2-pi steradian field of view of the tilted plane) spectral irradiance. The direct normal spectrum is the direct component contributing to the total global (hemispherical) spectrum. The current Standard Reference Spectra are both incorporated into a single document, ASTM G-173-03. The applicant, BrightSource, uses the ASTM standards for their calculations of irradiance and luminance.

The ASTM G173 spectra represent terrestrial solar spectral irradiance on a surface of specified orientation under one and only one set of specified atmospheric conditions. These distributions of power (watts per square meter per nanometer of bandwidth) as a function of wavelength provide a single common reference for evaluating spectrally selective PV materials with respect to performance measured under varying natural and artificial sources of light with various spectral distributions. The conditions selected were considered to be a reasonable average for the 48 continuous states of the United States of America (U.S.A.) over a period of one year. The tilt angle selected is approximately the average latitude for the contiguous U.S.A. The spectral irradiance of ASTM G173-03 standard reference spectra for extraterrestrial (above the atmosphere), direct normal (sun), and global normal (sun plus sky) is shown in **Figure 2**. The upper panel shows the full spectrum from 280 nm to 4.0 microns. The lower panel shows the region relevant for human vision (360-830 nm).

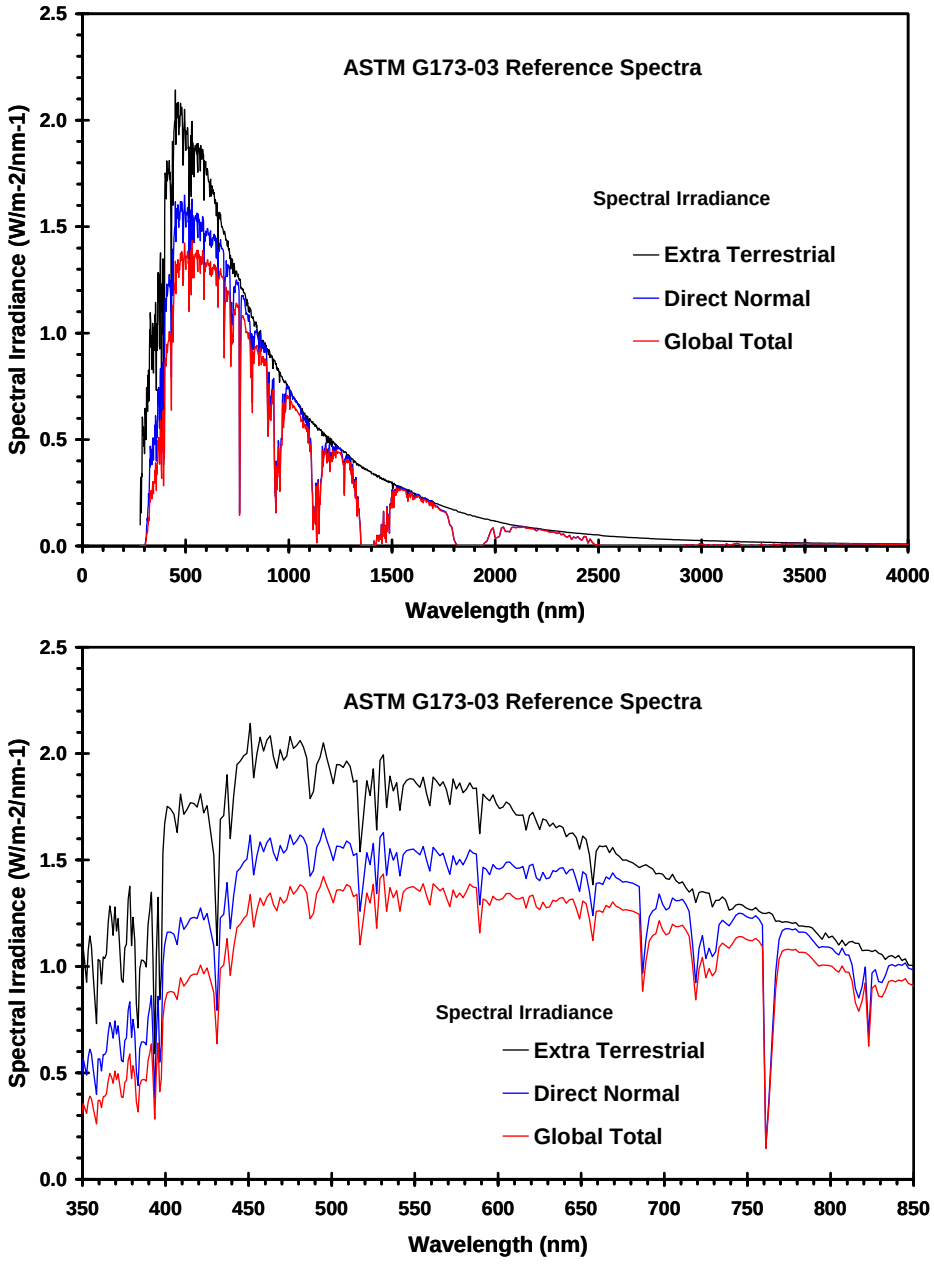


Figure 2 American Society for Testing and Materials G173-03 Reference Spectra.

Retinal Damage

The ability of light to cause injury to the retina has been shown both clinically and experimentally. Light can result in retinal damage through photothermal, photomechanical, and photochemical mechanisms (Irvin & Ramer, 1988). For the current project both photothermal and photochemical mechanisms are relevant.

Photothermal Retinal Damage

Photothermal retinal damage occurs when the eye is exposed to sufficient light energy to heat the retina to a point where damage occurs resulting in a permanent blind spot. Since the eye is an optical focusing system the energy at the retinal surface is

concentrated by as much as a factor of 100,000. The ocular impact on an observer, from the either the heliostats or the SRSGs is calculated as the retinal irradiance (Er). The calculation of Er takes under consideration the size of the light emitting object (SRSG or heliostat), the intensity in W/m^2 (irradiance) at the observer location, and the vulnerability of the human eye.

The level of exposure which is considered as the limit between safe and harmful is called Maximum Permissible Exposure (MPE) limit. The MPE which can be tolerated by the human eye is an industry standard and is defined by Sliney and Freasier & el. The MPE is defined for two exposure condition types: momentary exposure, correlated with the human blinking instinct, and continuous exposure.

- MPE for a momentary exposure (0.15 s) is 1 W/cm2 = 10,000 W/m2.
- MPE for continuous exposure is 0.1 W/cm2 = 1,000 W/m2.

Personnel and others within the plant boundaries will not be exposed to irradiance levels which exceed the MPE. The intensity of light emitted from the SRSG is lower (by three orders of magnitude) than that of the sun (20-70 W/m2 vs. 80,000 W/m2). BrightSource provided modeling in which the modest attenuation by air was not included, i.e., a worst case scenario. In this case the Er received by the retina varies proportionally with distance. Under these worst case conditions, the irradiance to which an observer at 250 meters from the SRSG is exposed is not greater than 50 W/m2, and this value decreases over distance (i.e., at 400 m it is less than 20 W/m2.)

Residents and motorists outside the plant boundaries will not be exposed to Er levels beyond the MPE. The nearest public right of way is Old Spanish Trail Highway (also called Tecopa Road) which is approximately 0.5 mile from the nearest SRSG at its closest point on the southern border of the solar facility. The nearest residential establishment is Charleston View along on the southern region of this same section of Old Spanish Trail Highway. At these distances the level of retinal irradiance exposure is less than 3 percent of the MPE for continuous exposure.

In normal operation, only the area of the SRSG will receive concentrations of solar radiation. Locations on the ground and areas surrounding the footprint of the plant will not receive solar radiation concentrations above that of direct sunlight. Therefore, in normal plant operation, there is no potential for any plant sourced solar radiation exposure hazard to motorists, residents or any member of the public outside the boundary of the project.

Further, project workers within the plant boundaries will not be exposed to Er levels beyond the MPE from either the SRSGs or heliostats. The maximum level of retinal irradiance exposure for project workers is less than 6 percent of the MPE for continuous exposure.

The heliostats are designed to reflect sunlight toward the SRSG at the top of the tower and for normal operation, the heliostats will orient themselves according to their position in the field, day of the year, and time of day, in order to reflect the sun rays either on the SRSG ("tracking" orientation) or on an area (standby ring) nearby (far enough from the tower and SRSG to free them from radiation but close enough to allow the heliostats to

quickly enter tracking mode, called "standby" orientation). In the standby position the heliostats reflect sunlight back into the sky where the distinct potential exists for the heliostat ‘beam’ to intercept aircraft.

The size of the site as defined according to the FAA regulations is the volume that encompasses the perimeter of the site and a height of 500 feet above the tower. This imaginary volumetric body is the control volume that the heliostat tracking system takes under consideration. In this volume the heliostats are programmed to concentrate flux in certain positions that will cause the flux leaving the imaginary control volume to scatter to a level that will cause no impact on aviation safety from a retinal damage perspective. The control system is designed so that solar flux will not exceed the momentary MPE (10 kW/m2) outside and above of this control volume.

Staff concludes that there is no risk for photothermal retinal damage. Further, as discussed immediately below in the Photochemical Retinal Damage section, project workers will also be provided with protective eyewear to mitigate the potential for photochemical damage. Although not necessary for photothermal damage the protective sunglasses will provide an additional margin of safety for workers within the solar field.

Photochemical Retinal Damage

Photochemical damage is associated with long-duration exposure times as well as lower-wavelength (higher-energy) light exposure. While retina pigment epithelium (RPE) and the neurosensory retina are protected from light-induced exposure by the absorption profile of the surrounding ocular structures (e.g., cornea, crystalline lens, macular pigments) and through retinal photoreceptor outer segment regeneration, photic injury is still possible due to photochemical retinal light toxicity mechanisms.

Photochemical injury is both dose-dependent and cumulative in nature. The cumulative time-dependent nature is that daily exposures can build up and can last many weeks. For example, it has been estimated that the half-life (1/e, when an exposure effect has decayed to approximately 37%) of the cumulative dose exposure effect is on the order of 30 days. This has significant implications for observers (e.g., workers over many weeks) that spend a significant amount of time in proximity to the high luminance environment of a solar field in the presence of the additional high terrestrial ambient of the desert environment.

As retinal injury can be caused by exposure to otherwise innocuous visible light, there appears to be some critical dose or threshold at which exposure becomes injurious. The safe exposure times for common ophthalmic instruments (e.g., fundal photography) has been reported in the literature and supports the concept of a critical threshold dose necessary for injury.

The potential for photochemical retinal damage to the public (both resident and motorists) and project workers given the cumulative exposure effects of the combined terrestrial ambient and solar field/ tower exposure levels has been addressed in Data Request 145.

Staff agrees that the potential for photochemical damage to the residential and motorist public is not significant. Residents and most motorists of the area known as Charleston View (population 36) along Old Spanish Trail Highway will be nearest the facility. Motorists utilizing Old Spanish Trail Highway will be no closer than 0.5 mile from the nearest SRSG. At these distances and because these individuals will not experience long duration exposure, there is no risk for photochemical damage. At these distances the level of retinal irradiance exposure is less than 2 percent of the MPE for continuous exposure. Nearby the only sizeable developed residential area is the community of Pahrump (population 36,441), located approximately 18 miles to the north.

When evaluating the implications of these effects on the viewer of the tower or the heliostats, it must be noted that the effect is directly related to the ambient and background light conditions. The HHSEGS is located in a bright desert environment thereby increasing the potential chance for photochemical retinal damage. The cumulative daily exposure to workers to the ambient environment combined with the additional potential cumulative effects of heliostat and SRSG exposure puts project workers at risk for photochemical retinal damage. This is due to the cumulative effect discussed above. Thus, to ensure the safety of the workers and others within the project boundaries, personnel protection equipment (PPE), in the form of protective glasses will be provided. Protective glasses have been developed for workers engaged in intense solar field work, tower work, and intense close viewing of the SRSG.

There is precedence for the issuance of special safety glasses, for example they have been issued to the operators at Solar Energy Development Center (SEDC), and the Coalinga and Ivanpah solar thermal plants. The potential photochemical retinal hazards are calculated according to IEC 62471 standard (same as CIE S 009: 2002), titled: "*Photobiological Safety of Lamps and Lamp Systems*", where the spectral values were taken from "ASTM G173-03 Reference Spectra Derived from SMARTS v. 2.9.2 (AM1.5)" and are the same as the "ISO 9845-1-1992." BrightSource has developed appropriate PPE in the form of specialty safety glasses (sunglasses) based on these standards for the workers engaged in intense solar field work, tower work, and intense close viewing of the SRSG.

Therefore, Worker Safety staff recommends Condition of Certification **Worker Safety 1** (Project Construction Safety and Health Program) and **Worker Safety-2** (Project Operations and Maintenance Safety and Health Program) which are designed to insure that workers in the solar field receive and wear the appropriate personal protective equipment including protective sunglasses.

Glint and Glare from the Heliostats

The applicant has demonstrated through modeling that heliostat retinal irradiance and beam intensity (under worst case conditions) is eye safe. The heliostats are designed to reflect sunlight toward the SRSG at the top of the tower and are programmed such that reflectivity would never be directed toward ground level viewers located outside of the project site.

Locations on the ground, areas surrounding the footprint of the plant, and the surrounding airspace, will not receive solar radiation concentrations above that of direct sunlight. Significant precautionary measures have been applied to the planned heliostat

control algorithms and Condition of Certification **TRANS-8** (Heliostat Operations Positioning and Monitoring Plan (HPMP)). This safe operation of the heliostats, according to the applicant, will be achieved with the following design and precautions:

- *Safe orientation as default orientation* – heliostats default to the safe orientation common to the whole field in all cases of malfunctions detected by the heliostat's controller, which ensures protection in most cases of malfunctions;
- *Safe path from any orientation to any other orientation* – when heliostats change their orientation, they choose a "path" which avoids reflected sunrays on all unintended areas (at least the tower and power block, and other designated sensitive areas).
- *Normal operation* - all the sunlight is reflected either on the receiver or the "standby" areas – located near the receiver – so that no other location receives solar radiation.

The HPMP and resulting control algorithms will accommodate any known sensitive receptors or receptor locations, such as a road or residence to the list of forbidden areas within each heliostat's controller. This way, each heliostat individually will avoid aiming reflected sunrays at the sensitive area to ensure that there will be no concentration of solar radiation on it. With these procedures appropriately implemented, the potential for glint and glare from solar radiation exposure by the reflected luminance for normal and emergency operation modes to motorists and residents should be maximally mitigated.

An additional glint and glare concern is for aircraft. Since the heliostats point skyward in their standby positions there is the distinct (if not inevitable) possibility for brief and intermittent direct exposure of the reflected sun from the heliostats to aircraft. The effect, however, for such exposures will diminish as a function of distance from the heliostat field. The heliostat mirrors although planar (flat) are tensioned in their pylon mountings when installed to produce a slight concavity. This produces a slight focusing effect to improve the amount of solar energy received at the SRGS from each heliostat.

According to the applicant, there are incremental design focal lengths at the planned HHSEGS site based on the range of the heliostat to the tower SRSG. When in the standby position this focal point will be slightly above the SRSG (since the heliostat is slightly elevated relative to the SRSG aiming point) and will diverge beyond the standby ring. Thus, an aircraft passing through one or more heliostat ‘beams’ at altitude above or near the heliostat field will receive a divergent beam. As such the appearance would not be that of a direct solar reflection such as is commonly witnessed from a specular (mirror-like) solar reflection off a lake or pond. Rather, the reflection would tend to be more diffuse and less bright, and become more and more diffuse and dimmer as a function of increasing distance/ altitude.

Thus, glint and/or glare from the heliostats experienced by pilots would be considered as a discomfort producing effect rather than as a disability producing effect. In the rare event of a flight path that received successive heliostat exposures in rapid succession over an extended period of time the pilot may experience this as significantly discomforting.

Glint and glare from the SRSGs

During operations the tower SRSGs will produce a sustained bright source of reflected light from the heliostats. Since the SRSGs are 'circular' (wrapping around the tower 360 degrees) and near the tower peak they will be highly visible from most vantage points and for many miles. There is no doubt that the tower SRSGs will result in a most prominent and sustained visual signature. The issue from a Traffic and Transportation perspective is will the SRSGs produce sufficient glare and/or excessive perceived brightness to result in disability glare and/or compromised operator performance. This is an essential question since there are essentially no realistic mitigating procedures for the tower SRSG luminance levels.

Perceived brightness, as well as glint and glare effects, depends on a variety of factors including the luminance of the global ambient, target size and the relationship between the luminance of the target and background. The global ambient luminance sets the state of visual adaptation and hence the spatial and temporal processing characteristics of the human visual system. Within this context perceived brightness depends critically on the luminance relationship and sizes of the target (SRGS) and background (sky). The irradiance of the sun is enormous, on the order of 80,000 W/m^2. As such, the luminance of the sun is also enormous and is on the order of 1.6x109 cd/m2 (clear sky at noon).

Calculations by the applicant as well as field spectroradiometric measurements conducted by staff have provided realistic and nominal values for the luminance of the SRSGs and the sky background during plant operations. During power generating operations the levels of retinal irradiance that will be created by the tower SRSGs have been calculated to be 68 W/m^2 in views from the north, and 53 W/m^2 in views from the south. These correspond to maximum luminance values for the SRSGs of 230,000 cd/m^2 and 424,000 cd/m^2, respectively.

The north view value is 2,941 times less than that of the sun. The background sky within which the tower will be viewed will vary according to atmospheric and weather conditions but on a clear sunny day will be on the order of 6,175 cd/m^2. As such the SRSGs will be 37 times more luminous (230,000/6,175) than the background. Even in the high state of light adaptation produced by the daytime environment this will appear quite bright to observers. However, the SRGS are still a factor of approximately 7,000 times less luminous that the sun.

What do these values translate to in terms of perceived brightness? In the field of human visual psychophysics Stevens' Power Law[1] is used to describe the relationship between the magnitude of a physical stimulus and its perceived intensity or strength. The general form of the law is

$$P(I) \equiv cI^a$$

where I is the magnitude of the physical stimulus P, P(I) is the psychophysical function relating to the subjective magnitude of the sensation evoked by the stimulus, 'a' is an exponent that depends on the type of stimulation and 'c' is a proportionality constant that depends on the type of stimulation and the units used. Although Stevens' Power Law is based on psychophysical judgments of perceived stimulus magnitude it has been

shown to be generally valid for a variety of sensory domains including vibration, lightness, smell, taste, warmth, cold, pain, pressure, brightness, viscosity, duration, etc.

For perceived brightness under daylight observation conditions the brightness exponent is generally considered to be 1/3. This is a compressive function. For example, if a 25 W light bulb is exchanged for a 100 W light bulb, the perceived brightness should increase by a factor of 1.59 or 59 percent. The exponent of 1/3 for perceived brightness is valid over a wide range of stimulus conditions. This exponent provides a best estimate for perceived brightness given the general observation conditions in the solar field and the general vicinity. **Figure 3** shows the predicted relative perceived brightness for the sun, SRSGs and background sky. The constant, 'c' in Stevens' psychometric equation was set to 1.0 to produce a perceived brightness value of 10 for a 1,000 cd/m^2 stimulus. Under these conditions and observer would rate the brightness magnitude of the background sky as 18, the brightness of the SRSGs as 61, and the brightness of the sun as 1,170. Thus, perceptually, although the SRSG is 37 times more luminous than the background sky, the perceived brightness is only 3.3 times as great (61/18). Further, the sun would be perceived as 19 times brighter than the SRSGs (1,170/61) and 64 times brighter than the sky (1,170/18).

	Luminance (cd/m2)	Relative Brightness
Sun	1,600,000,000	1,170
Tower SRSG	230,000	61
Sky	6,175	18

Figure 3. Perceptual brightness as a function of the luminance of the sun, tower SRSGs and the background sky based on Stevens' Power Law with a brightness exponent of 1/3 and a constant of 1.0.

Thus, the brightness of the SRSGs experienced by all observers would be on the order of at least a factor of four times greater than that of the background sky. This level of brightness is certainly prominent and may be distracting or discomforting but is not considered as debilitating or producing a disability glare. Additionally, these values for relative brightness are only estimates and are considered as nominal for viewing distances on the order of 1000-2000 meters where the visual size of the SRSGs are reduced to less than 0.5 degree. For greater ranges perceived brightness will remain relatively constant out to a critical size approaching the limits of visual acuity and only be reduced by atmospherics. For greater ranges perceived brightness will obey Steven's power law. For closer ranges within the solar field perceived brightness could increase substantially as the visual size of the SRSG's increases.

At a viewing distance of 2.8 miles the tower receivers will have a visual subtense equal to that of the Sun, i.e., 1/2 deg or 30 min arc. At 8.5 miles, the receivers will have a visual subtense of 1/6 deg, 10 min arc. At this visual size perceived brightness will begin to transition from being constant to being log linear according to Stevens' power law.

The distance at which brightness will be proportional to distance (log linear) will be at a visual subtense of approximately 5 min arc (1/12 deg) as size begins to transition to the

limits of visual acuity. This condition is met at a viewing distance of 16.9 miles. In between the 2.8 miles and 16.9 miles viewing distances the visual subtense of the receiver is changing from 30 min arc to 5 min arc, a change in area of 36 times. As such perceived brightness will be decreasing because of the changing size. It will transition between a constant and log linear. A stimulus on the order of 230,000 cd/m2 (61 times more luminous than the nominal desert sky at that location) will be significantly visually disruptive and be significant in perceived brightness for angular sizes of 10 min arc and greater. For the SRSGs, this translates to a viewing distance of 8.5 miles or less. Thus, the threshold viewing distance at which the tower receivers (under nominal power generation conditions) are considered as producing a visual glare which is both significant in perceived brightness and significant in visual disruption is 8.5 miles.

It should be noted that glare is generally considered as a scattering effect in the eye, although any optical interface can also add to perceived glare, such as glasses, automotive windshields and aircraft canopies. Scattering in the human eye increases as a function of age^2. Glare related scatter effects remain nearly constant as a function of age until 40-45 years when scatter rises exponentially and triples by the age of 60. As such any glare effects produced by the SRSGs may be more pronounced in the aging population.

CONCLUSIONS

Staff concludes that the glare effects from the tower solar receiver steam generators (SRSGs) receivers are significant and unavoidable. The brightness of the SRSG would be clearly visible and prominent. The relatively high level of brightness and the resulting glare effects from the SRSGs would produce a distinct visual distraction effect and be significant in perceived brightness and discomfort/disruption glare effects for a nominal viewing distance of 8.5 miles. However, these glare effects are not considered as sufficient to be visually debilitating in producing disability glare and thus would not cause a safety hazard from a ground-based or airborne (e.g., driving a vehicle, flying a plane) operator control perspective.

TRAFFIC & TRANSPORTATION

List of Comment Letters

		Traffic & Transportation Comments?
1	Inyo County	X
2	Bureau of Land Management	
3	National Park Service	
4	The Nature Conservancy	
5	Amargosa Conservancy	
6	Basin & Range Watch	
7	Pahrump Paiute Tribe	
8	Richard Arnold, Pahrump Piahute Tribe	
9	Big Pine Tribe of Owens Valley	
10	Intervenor Cindy MacDonald	X
11	Intervenor Center for Biological Diversity	
12	Intervenor, Old Spanish Trail Association	
13	Applicant, BrightSource Energy, Inc.	X

Comment #	DATE	COMMENT TOPIC	RESPONSE
1	**July 17, 2012**	**Inyo County**	
1.6		**Old Spanish Trail Highwy and Enforcement:** The County is concerned that the Condition of Certification **TRANS-4 (Truck Route)** does not contain a process by which the project owner or contractor(s) would be fined if truck traffic used Old Spanish Trail Highway and State Route 127 to access the project site or to reimburse the County for costs to repair the roadway.	The California Energy Commission through the Warren-Alquist Act Section 25534 (b) provides a process for civil penalties for non-compliance with Conditions of Certification. In addition, staff has added language to Condition of Certification **TRANS-4- Truck Route** requiring a spotter at the project site to ensure that truck traffic entering the project site are not using the Old Spanish Trail Highway via State Route 127.

1.61		**Revised Condition of Certification (COC):** The County requests a revision to COC **TRANS-2** (**Right-of-Way**) to include new language: The configuration of driveways into the HHSEGS site do not allow for rights-of way for traffic transitions within the limits of the HHSEGS site. The drive locations shall be reconfigured to accommodate traffic transitions within the limits of the property boundaries or additional right-of-way beyond the HHSEGS site shall be acquired and dedicated to Inyo County along the Old Spanish Trail Highway. Also add language to the Verification to state the right-of-way must be accepted by Inyo County.	Refer to Condition of Certification **TRANS-2** for revised language, which addresses new right-of-way language.
1.62		**New Condition of Certification:** The County requests a new Condition of Certification TRANS-2A: (**Pavement Preparation/Widening**) as follows: Prior to any ground disturbance, other improvements, or other obstruction of traffic within any public road, the project owner shall apply for and receive an encroachment permit from Inyo County for the construction and completion of construction of an asphalt concrete overlay on Old Spanish Trail Highway and pavement widening including transitions to accommodate the turning movements along Old Spanish Trail Highway into and out of the HHSEGS site. Verification language: Prior to the start of onsite construction, the project owner shall provide evidence to the CPM that the construction of asphalt concrete overlay and turn lanes into and out of the HHSEGS site have been accepted by Inyo County.	The new requested Condition of Certification TRANS-2A was not incorporated as the " construction of an asphalt concrete overlay on Old Spanish Trail Highway " prior to any ground disturbance does not meet CEQA Guidelines Section 15370 - Definition of Mitigation. However, CEC has recommended COC **TRANS-3** (**Restoration of All Public Roads, Easements, and Rights-of-Way**) rectifying the impact by repairing, rehabilitating, or restoring the impacted environment which would be Old Spanish Trail Highway.

1.63		**Revise Verification COC TRANS - 3** to: Prior to the start of site mobilization, the project owner shall photograph or videotape all of the affected public roads, easements, right-of way segment(s), and/or intersections (including the portion of the Old Spanish Trail located to the west of project). The project owner shall provide the photographs or videotape to the CPM and the affected jurisdictions (California Department of Transportation (Caltrans), Nevada Department of Transportation (NDOT), and Inyo County). The purpose of this notification is to request that these jurisdictions consider postponement of any planned public right-of-way repair or improvement activities in areas affected by project construction until construction is completed, and to coordinate any concurrent construction-related activities that cannot be postponed. If damage to public roads, easements, or rights-of-way is identified by the project owner or the affected jurisdiction ~~occurs during construction,~~ the project owner shall immediately notify the CPM and the affected jurisdiction(s) to identify the section of the public right-of-way to be repaired. At that time, the project owner shall apply for, receive and comply with all conditions of an encroachment permit from the affected jurisdiction and establish a schedule for completion and approval of the repairs. Following completion of any public right-of-way repairs, the project owner shall provide the CPM letters signed by the person authorized to accept the repairs in the affected jurisdiction(s) stating their satisfaction with the repairs. If, in the opinion of the affected jurisdiction(s), the project owner is not timely in completing the required repairs, the jurisdiction(s) can, at its discretion, complete the repairs with its own staff or contract with an independent contractor to complete the repairs at the expense of the project owner. The project owner will reimburse the affected agency(ies) for the expense of the repairs.	Refer to Condition of Certification **TRANS-3** for revised language.

1.64		**Revise COC TRANS-4 (Truck Route)** as follows: The project owner shall require all construction truck traffic use State Route 160 for all access to and from the project site. Throughout the construction and operation of the project, the project owner shall document, that all trucks access the project site using Nevada State Route 160 and shall investigate, evaluate and ~~attempt to~~ resolve all project truck-related complaints. The project owner or authorized agent shall: Use the Traffic Complaint Resolution Form (below), or a functionally equivalent procedure acceptable to the CPM, to document and respond to each traffic complaint; Attempt to contact the person(s) making the traffic complaint within 24 hours; Conduct an investigation to determine the transportation company in the complaint and; Submit a report documenting the complaint and actions taken. The report shall include: a complaint summary, including the final resolution and, if obtainable, a signed statement by the complainant stating that the truck route problem has been resolved to the complainant's satisfaction. The project owner will pay a $10,000 penalty to Inyo County for each truck that accesses the site using the portion of the Old Spanish Trail Highway to the west of the project. This penalty shall be in addition to the restoration of any damage to the portion of the Old Spanish Trail to the west of project caused and addressed in accordance with **TRANS-3**.	Refer to COC **TRANS-4** for revised language. The California Energy Commission through the Warren-Alquist Act Section 25534 (b) provides a process for civil penalties for non-compliance with Conditions of Certification.
1.65		**Revise COC TRANS-5 (Traffic Control Plan, Heavy Hauling Plan and Parking/Staging Plan)**: Add a new sentence after the last bullet that states" For any activity on public roads, the project owner shall apply for, receive and comply with all conditions of an encroachment permit from the affected jurisdiction. Verification: At least 60 calendar days prior to the start of construction, the project owner shall submit the TCP to the applicable agencies for review and comment and to the CPM for review and approval. The project owner shall also provide the CPM with a copy of the transmittal letter to the agencies requesting review and comment, and a copy of the encroachment permit issued by the affected agency for any activities on a public road.	Refer to Condition of Certification **TRANS-5** for revised language.

Comment #	DATE	COMMENT TOPIC	RESPONSE
10	**July 21, 2012**	**Intervenor Cindy MacDonald -- p. 15-1**	
10.1		Requests the location of the waiting area for delivery trucks if they arrive at the project site outside of prescribed times.	Refer to Construction Workforce Parking and Laydown Area for discussion of 180 acres on an adjacent parcel that is contigious to the project site. Access to the construction and laydown area would be from the Old Spanish Trail Highway.
10.2		Requests new mitigation measures for HHSEGS for waiting delivery trucks to turn off their engines if they must wait longer than three minutes for site entry in order to control air emissions and 5:00 am noise pollution to Charleston View residents located five acres away from the Old Spanish Trail Highway/Tecopa Road.	Refer to Air Quality Section - Condition of Certfication **AQ-SC5(j)** and Noise and Vibration Condition of Certification **NOISE-6** - Construction Restrictions.
10.3		Potential additional vehicle impacts on Old Spanish Trail Highway/Tecopa Road from the students at the Front Site Firearms Training Institute located within the State of Nevada have not been addressed. The comment referenced an article in the Pahrump Valley Chamber of Commerce Magazine (23rd Edition, 2012) that stated the Front Site Firearms Training Institute trained nearly 25,000 students in 2011.	A discussion of traffic generated by Front Sight Firearms Training Institute has been included in the Traffic and Transportation FSA Section.
Comment #	**DATE**	**COMMENT TOPIC**	**RESPONSE**
13	**July 23, 2012**	**Applicant, BrightSource Energy, Inc. -- p. 241**	
13.1		General Comment: PSA thorough, objective and accurate analysis on Traffic and Transportation issues but several proposed Traffic and Transportation Conditions of Certification are more stringent than the conditions placed on similarly situated projects licensed by the Commission.	Comment noted regarding the PSA analysis. The proposed conditions of certification for HHSEGS have been incorporated from other approved projects associated with construction truck and vehicle traffic impacts.

13.2		General Comment: Request the access road south of the project site be referenced as Tecopa Road rather than Old Spanish Trail Highway to avoid confusion with the Old Spanish Trail Historic Trail.	The Old Spanish Trail Highway nomenclature has been retained in the Traffic and Transportation Section as it is used by the Department of Transportation (Caltrans), Traffic Data Branch, Traffic and Vehicle Data Systems Unit for traffic counts ; Caltrans - District 9 stated in thier commets to the Updated Workforce Analysis the road is named Old Spanish Trail Highway; Inyo County references Old Spanish Trail Highway and Old Spanish Trail Highway is depicited on the United States Geological Survey (USGS) topographic maps. New language has been included to explain the difference between Old Spanish Trail Highway and Old Spanish Historic Trail.
13.3		General Comment: Request deletion of Conditon of Certification **TRANS-1** - (**Roadway Use Permits and Regulations**). This condition has not been imposed on other similarly situated renewable energy projects and would be burdensome, costly and unenforceable. It has not been shown that the Commission has the authority to impose a condition regarding the permits for vehicles that travel roads in California and Nevada. The Commission has jurisdiction over power plant "sites and related facilities." This condition would be a significantly burdensome and unnessary expansion of the Commission's jurisdiction.	CEC Staff disagrees with the deletion of this Condition of Certification. Of the 11 approved solar thermal projects since 2008, this Condition has been imposed on six Traffic and Transportation projects. Specifically, Palen; Genesis ; Blythe ; Calico ; Palmdale and Rice.
13.4		General Comment: Requests revision to Condition of Certification **TRANS-2 -** Rather than 24 feet of right-of-way along Old Spanish Trail Highway the condition should be revised to specify that the project owner shall provide the necessary right-of-way for acceleration and	Refer to Condition of Certification **TRANS-2** for revised language which addresses right-of-way requirements.
13.5		General Comment: Request revision to the Socioeconomics language to be consistent with the language in the Socioeconomics section.	Staff Agrees- Text has been revised.

13.6		General Comment: Requests a revision to Condition of Certification **TRANS-3** -(**Restoration of All Public Roads, Easements, and Rights-of-Ways**). The condition is different and more stringent than the standard condition that has been applied to similarly situated projects. This condition requires the project owner to restore all public roads that have been damaged due to project related construction activities to "original condition or better in compliance with the applicable jurisdiction's specifications." The verification language differs from the standard condition and raises a number of potential ambiguities in the manner in which it would be applied. To avoid any possible confusion, we urge the Commission to apply the standard condition and verification language.	CEC Staff has revised the language - the phrase or better has been deleted. The COC language was strengthened to address deteriorating roadways during construction of projects.
13.7		General Comment: Requests a revision to Condition of Certificatio**n TRANS 4 (Truck Route).** The condition states that "The project owner shall require all construction truck traffic use State Route 160 to the project site." We recommend that the condition be revised to specify that all construction truck traffic originating from outside of Inyo County shall not use Tecopa Road from east of the project site. We expect that there will be some construction trucks that may originate from within Inyo County and we would not want to have a condition that would inadvertently preclude service or deliveries from Inyo County businesses.	Refer to Condition of Certification **TRANS-4** for revised language.
13.8		General Comment: Requests deletion of COC **TRANS-6 (Transportation of Hazardous Materials**). As with **TRANS-1** the requirement to contract with licensed hazardous material delivery companies is established by law and is the responsibility of the transporter, not the customer, and is unnecessary, burdensome and inconsistent with previous CEC projects.	CEC Staff disagrees with the deletion of this COC. Of the 11 approved solar thermal projects since 2008, this COC has been imposed on five Traffic and Transportation projects. Specifically, Palen; Genesis ; Blythe ; Calico and Palmdale.

13.9		Specific Comment: Page 4.11-9, Level of Service, 3rd and 4th paragraphs: The levels of service (LOS) was calculated using seconds of delay not a volume/capacity (V/C) ratio. Therefore, revise the 2nd paragraph as follows: Based on the traffic volumes, the turning movement counts, and the existing number of lanes at each intersection, the ~~volume/capacity (V/C) ratios and levels of service~~ (LOS) have been determined for each intersection. Traffic and Transportation Table 2 summarizes the intersection ~~roadway~~ LOS criteria based on seconds of delay~~for associated V/C ratios~~.	Staff Agrees - Text revised.
13.10		Specific Comment: Page 4.11-9, Table 2, Level of Service Criteria for Roadways and Intersections: Delete "~~Roadways and~~" in the table title since the definitions are only for roadways. A separate table for roadways and LOS may be warranted.	Staff Agrees - Text revised.
13.11		Specific Comment: Page 4.11-9, Table 2, Level of Service Criteria for Roadways and Intersections, 2nd column, Control Delay (seconds/vehicles): The control delay listed in this column is for intersections.	Staff Agrees - Text revised.
13.12		Specific Comment: Page 4.11-12, Bicycle and Pedestrian Facilities, 2nd paragraph, 1st sentence (note the font in the heading is inconsistent): A Class II bike lane is provided on either side of SR 160. Thus, please revise the first sentence as follows: Due to the remoteness of the area there are no designated bicycle lanes in the area (other than SR 160) or adjacent to HHSEGS.	Staff Agrees - Language Added
13.13		Specific Comment: Page 4.11-14, Item 8: Applicant suggests that this item be deleted because it is not an applicable threshold of significance under CEQA.	Comment Noted - Staff has retained this item as CEC also utilizes LORS used by other Governmental Agencies and in this case FAA.

13.14		Specific Comment: Page 4.11-15, Construction Period Impacts and Mitigation, 1st paragraph, 1st sentence: Only one intersection was analyzed. Suggest the following change: Staff analyzed the proposed HHSEGS's potential traffic impacts by evaluating state route segments, roadway segments, and the intersections of SR 160 and Tecopa Road in the vicinity of the project site.	Staff Agreed and added the requested language. However, language has since been revised based on the October 1, 2012 Updated Workforce Analysis .
13.15		Specific Comment: Page 4.11-15, Construction Workforce Traffic, first two paragraphs: The analysis has been revised to be consistent with revised impacts from using construction truck traffic levels used in the air quality construction impact assessment. Suggest the following changes be made: insert the phrase at the project site between the words workforce and would; revise the number of peak constructon workers from 634 per month to 641; revise the percentage of peak workforce from 82 percent to 86 percent; insert the phrase a peak between the words In addition and approximately; revise the number of workers to construct the gas and transmission lines from 42 to 66; Delete the phrase and linear compliance support.	Staff Agreed and added the requested language. However, language has since been revised based on the October 1, 2012 Updated Workforce Analysis .
13.16		Specific Comment: Page 4.11-16, 4th paragraph: Please revise as follows: revise the total number of daily auto trips from 1,910 to 1,912 and revise the number 860 for morning and afternoon peak hour trips to 863.	Staff Agreed and added the requested language. However, language has since been revised based on the October 1, 2012 Updated Workforce Analysis .
13.17		Specific Comment:Page 4.11-16 and 17, Revise Table 4 - Daily Trips for Automobiles from 1,910 to 1,912; Trucks from 834 to 768; total from 2,744 to 2,680; Automobiles in from 860 to 863; Trucks in from 47 to 43; Automobiles out from 860 to 863; Trucks out from 47 to ; Total out from 907 to 906; add new language in the footnote : Assumes peak of 384 truck deliveries are spread equally throughout the day from 6:00a.m to 6:00p.m. with a 3-hour lag for unloading. Revise Table 5: Morning shift Non-Craft from 38 to 41; Morning Shift Total Workforce from 930 to 933	Staff Agreed and added the requested language. However, language has since been revised based on the October 1, 2012 Updated Workforce Analysis .

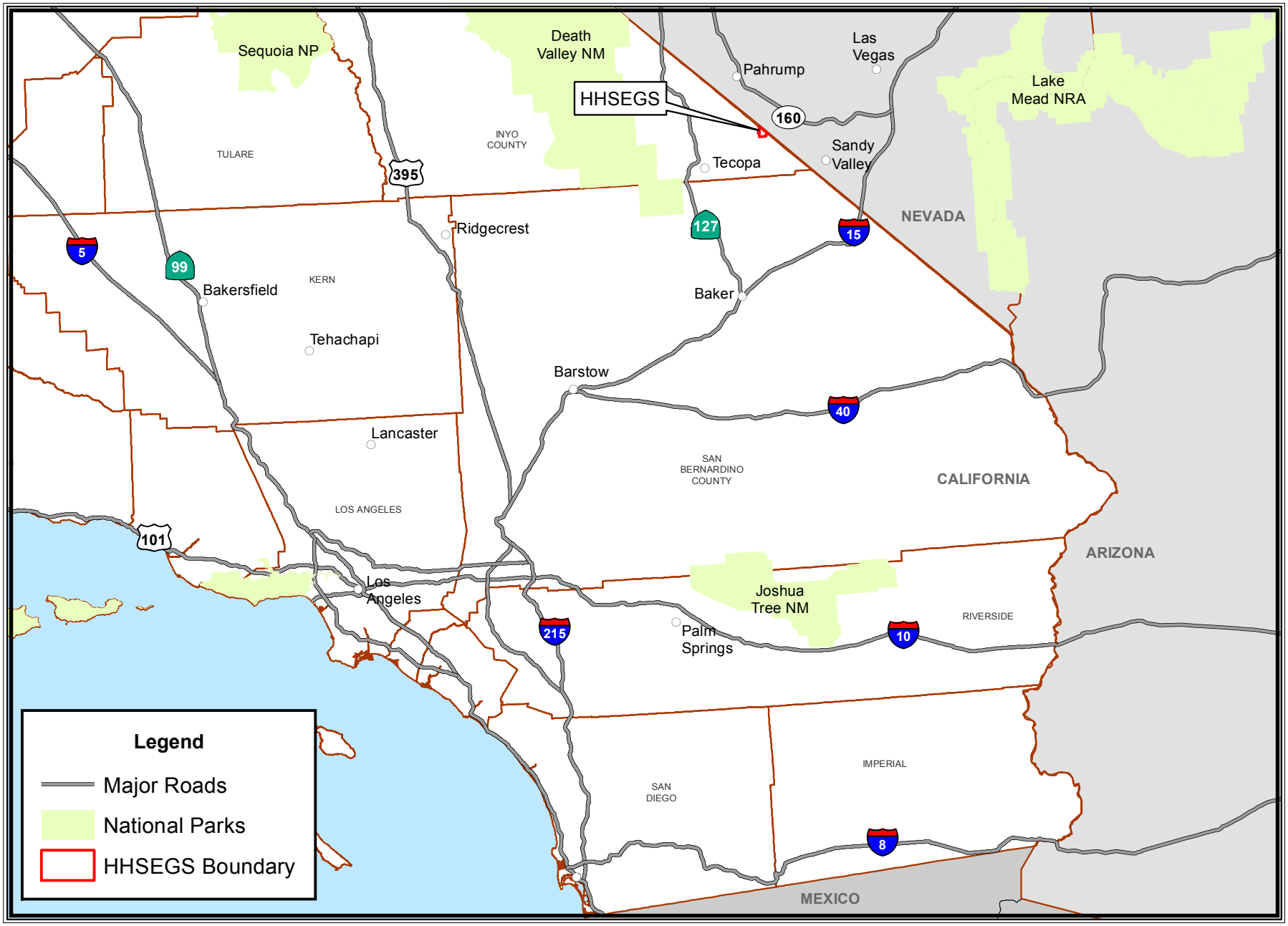
13.18		Specific Comment: Page 4.11-17, 1st paragraph following Table 5 - Revise peak trip generation numbers from ~~860~~ to 933;	Staff Agreed and added the requested language. However, language has since been revised based on the October 1, 2012 Updated Workforce Analysis .
13.19		Specific Comment: Page 4.11-18- Revise Tables 6 and 7 text to: Please note that in Table 7, LOS was recalculated with revised trips. LOS changed slightly during AM peak hour. LOS remained the same during PM peak hour.	Staff Agreed and added the requested language. However, language has since been revised based on the October 1, 2012 Updated Workforce Analysis .
13.20		Specific Comment: Pages 4.1-20 through 4.1-22, Construction Truck Traffic: Table 8 represents trucks per month, instead of trucks per day. The peak number of trucks in 1 day is estimated to be 90 trucks. However, to be consistent with the Air Quality analysis, a peak of 384 truck deliveries (768 truck trips) per day was used in the following revised analysis. As a result of our revised analysis, please change this section to read as follows. Also, it is unrealistic to think that trucking companies would turn their trucks and cargo over to unlicensed drivers. This is cautiousness beyond reality and COC **TRANS 1** should be deleted. Please add the following language: Monthly truck deliveries would peak at 717 trucks during Month 5. Peak daily truck deliveries has been estimated using delivery records from construction at Ivanpah SEGS. During the period October 2010 through April 2012, the highest number of daily truck deliveries at Ivanpah SEGS was 72. Adding a 25 percent contingency for HHSEGS would yield a maximum of 90 delivery trucks on a peak day. The analysis of construction deliveries for the Air Quality assessment used a more-conservative method to determine the peak daily number of delivery trucks, using a calculation based on truck volumes during the highest 12 consecutive months. The result was a conservative estimate of 384 deliveries per day, or 768 one-way truck trips per day. To be conservative and consistent with the Air Quality analysis, this much larger value was used in the revised traffic analysis.	Staff Agrees- Numbers revised based on the PSA comments and the October 1, 2012 Updated Workforce Analysis.

13.21		Specific Comment: Page 4.1-22 and 4.11-23 Construction Truck Traffic- Requests new text and numbers based on the applicant's revised analysis.	Staff Agreed and added the revised numbers and language. However, language and numbers has since been revised based on the October 1, 2012 Updated Workforce Analysis .
13.22		Specific Comment: Page 4.11 24, Workforce Traffic, 5th paragraph: Please clarify the last paragraph as follows: The operation employees would generate 240 vehicle daily trips (in/out).	Staff Agrees - Text revised.
13.23		Specific Comment: Page 4.11 25, Truck Traffic and Hazardous Materials Delivery, 3rd paragraph, 1st sentence: This sentence is incorrect. The Safety Management Plan required pursuant to Condition HAZ 3 pertains to the off loading of hazardous materials on the HHSEGS site. It does not pertain to the delivery of hazardous materials while in transit to the site.	Text revised to be consistent with Hazardous Materials Management Section of the FSA.
13.24		Specific Comment: Page 4.11 -27, Compliance with LORS, Table 8: This table should be numbered Table 9. Also, in the row "Section 7.2.4 Roadways and Highways – Policy RH 1.4 Level of Service." Please clarify whether the "Description" is intended for permanent development or just during temporary construction.	Staff Agrees - Table number revised; LOS C is the minimum LOS on all roadways in the County of Inyo for both permanent development and construction.
13.25		Specific Comment: Page 4.11 30, Traffic Impacts, Table 9: This table needs to be renumbered as Table 10.	Staff Agreed and renumbered. However, the Table has since been revised based on the October 1, 2012 Updated Workforce Analysis .

13.26		Specific Comment: Pages 4.11 32 and 33, Hidden Hills Transmission Project, 1st paragraph: Please start a new subsection called “Summary” after the first sentence. This paragraph reads like the Hidden Hills Transmission Project would require 1,622 workers.	Staff Agrees - Heading added for clarification.
13.27		Specific Comment: Page 4.11 33, Noteworthy Public Benefits: Requests the following be included: These improvements could include: Re engineering and repaving Tecopa Road from SR 160 to the project site and adding a right turn pocket at Tecopa Road and SR 160. Increased LOS of improved areas after construction is completed. Adding deceleration lanes to Tecopa Road at the project would improve the roadway along the project frontage with enhanced traffic patterns.	Comment Noted- Staff did not include these as Noteworthy Public Benefits as but for HHSEGS the improved infrasctructure would not be warranted.
13.28		Specific Comment: Page 4.11 33, Conclusions, 2nd and 3rd paragraphs: The information about Socioeconomics is incorrect. There are no Census blocks within the 6 mile radius that have minority populations greater than 50 percent. See also Page 4.9 5 of the Socioeconomics section of the PSA, under the heading, “Minority Populations.”	Staff Agrees - Statement corrected.

TRAFFIC AND TRANSPORTATION - FIGURE 1

Hidden Hills Solar Electric Generating System (HHSEGS) - Regional Street Network



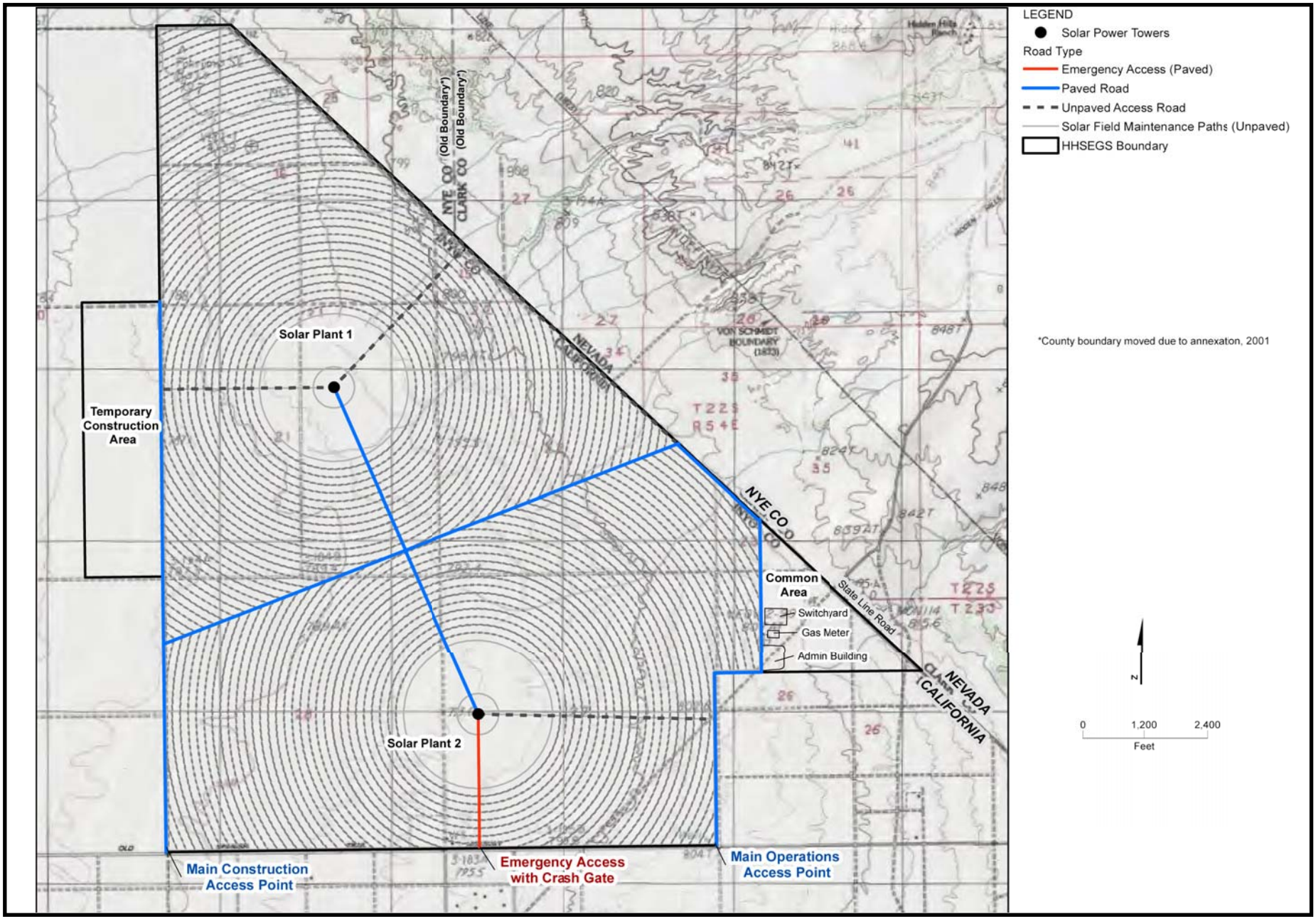
TRAFFIC AND TRANSPORTATION

CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: CH2MHILL, MultiNet

TRAFFIC AND TRANSPORTATION - FIGURE 2

Hidden Hills Solar Electric Generating System (HHSEGS) - Access Roads and Paved Internal Roadways



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: CH2MHILL \ DR

TRAFFIC AND TRANSPORTATION - FIGURE 3

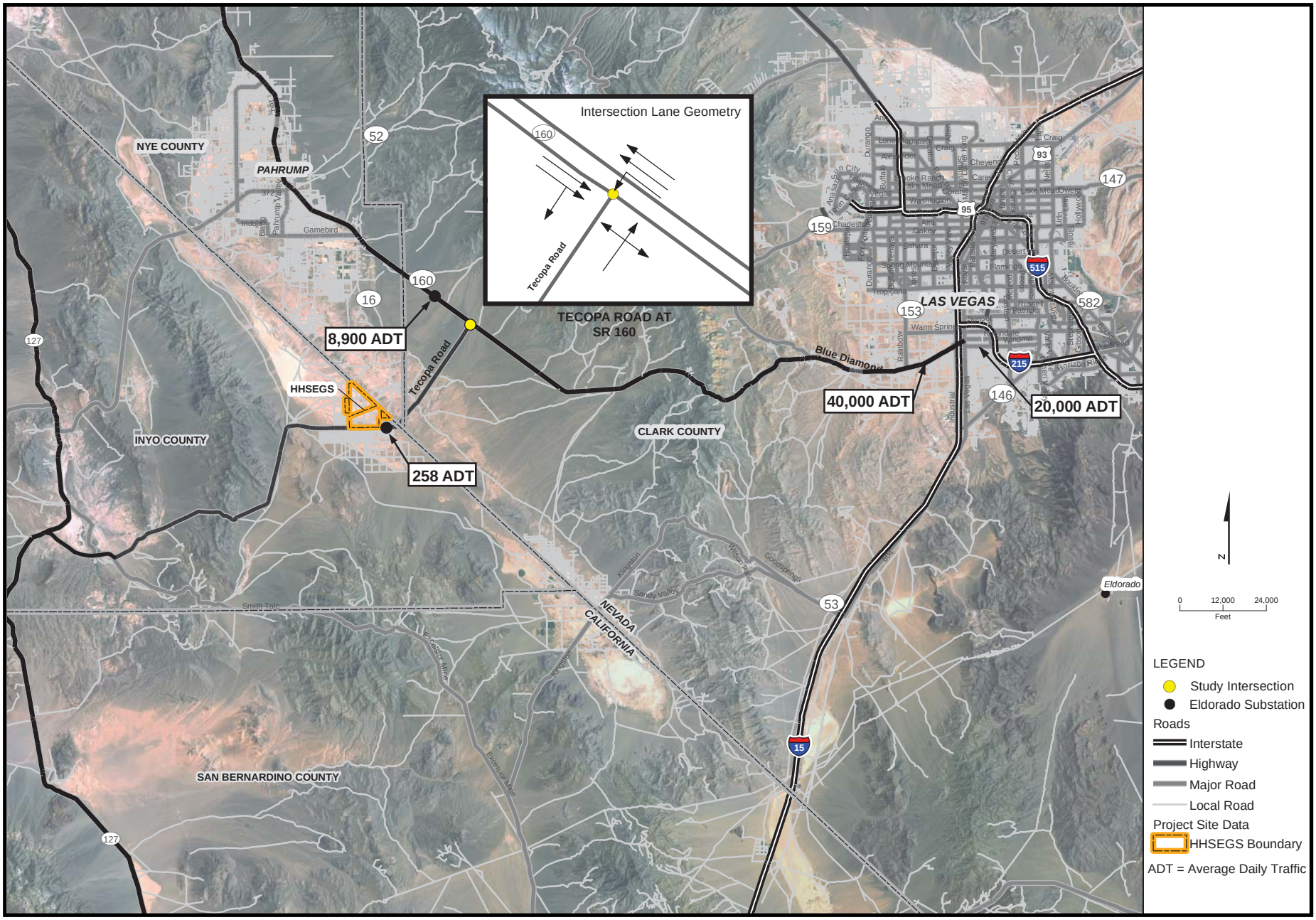
Hidden Hills Solar Electric Generating System (HHSEGS) - Local Street Network

CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: CH2MHILL, Open Street Map

TRAFFIC AND TRANSPORTATION - FIGURE 4

Hidden Hills Solar Electric Generating System (HHSEGS) - Local Street Network ADT



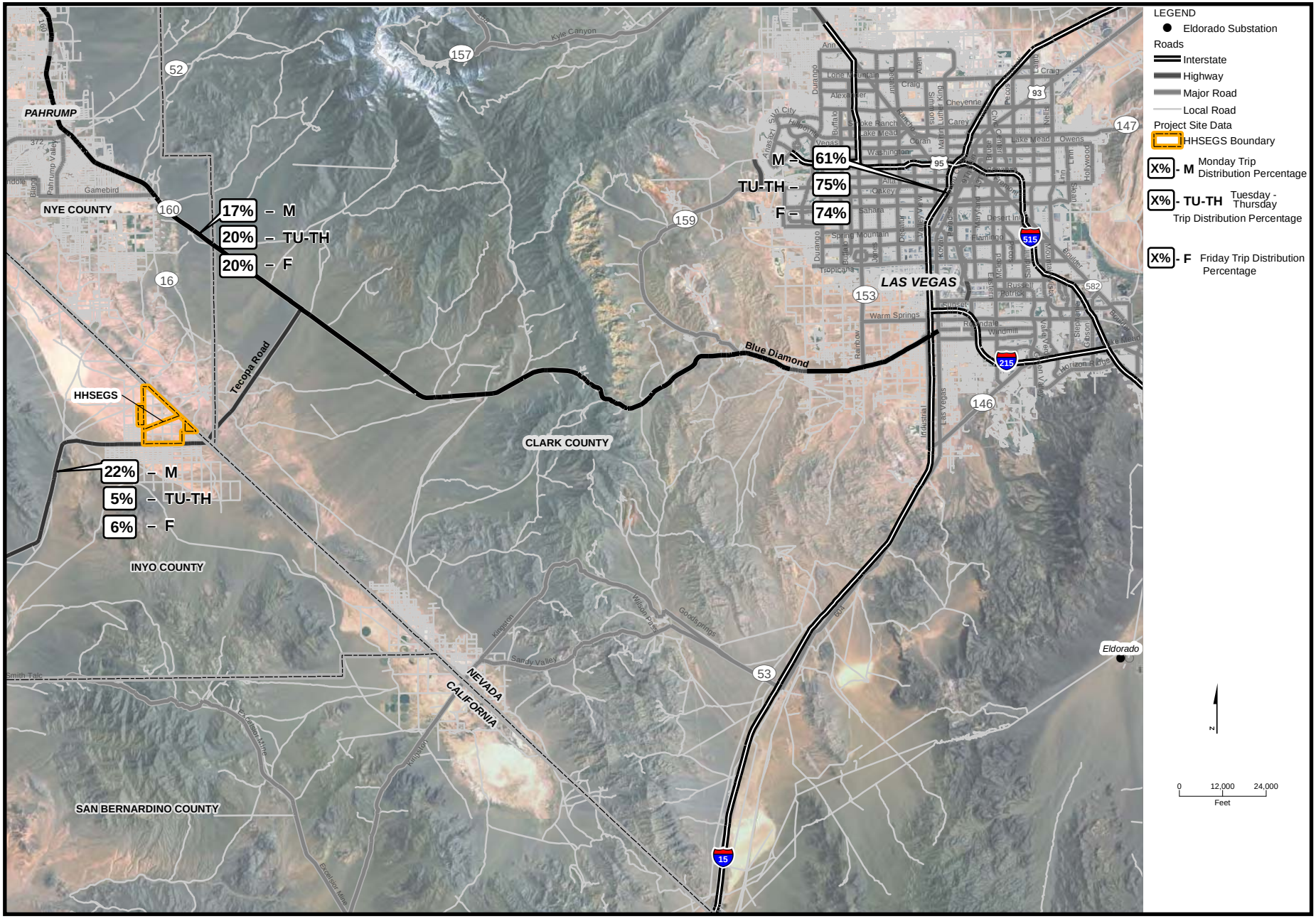
TRAFFIC AND TRANSPORTATION

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: AFC Figure 5.12-2

TRAFFIC AND TRANSPORTATION - FIGURE 5

Hidden Hills Solar Electric Generating System (HHSEGS) - Project Trip Distribution Percentages AM Peak Hour

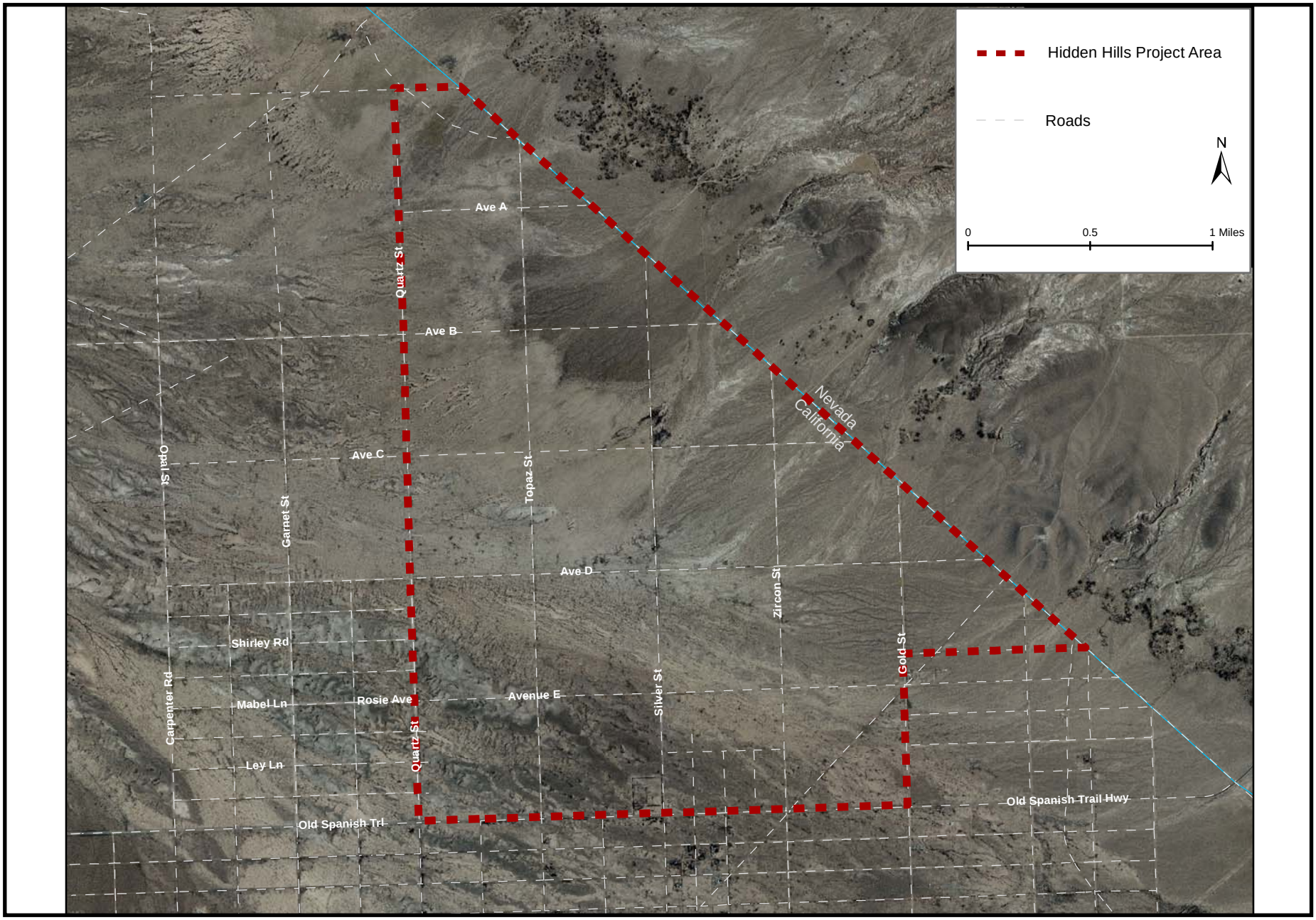


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: 2012-10-01 Updated Workforce Analysis TN-67434 - Fig 5.12-4AR1

TRAFFIC AND TRANSPORTATION - FIGURE 6

Hidden Hills Solar Electric Generating System (HHSEGS) - Grid Pattern of Roads within the Project Area.



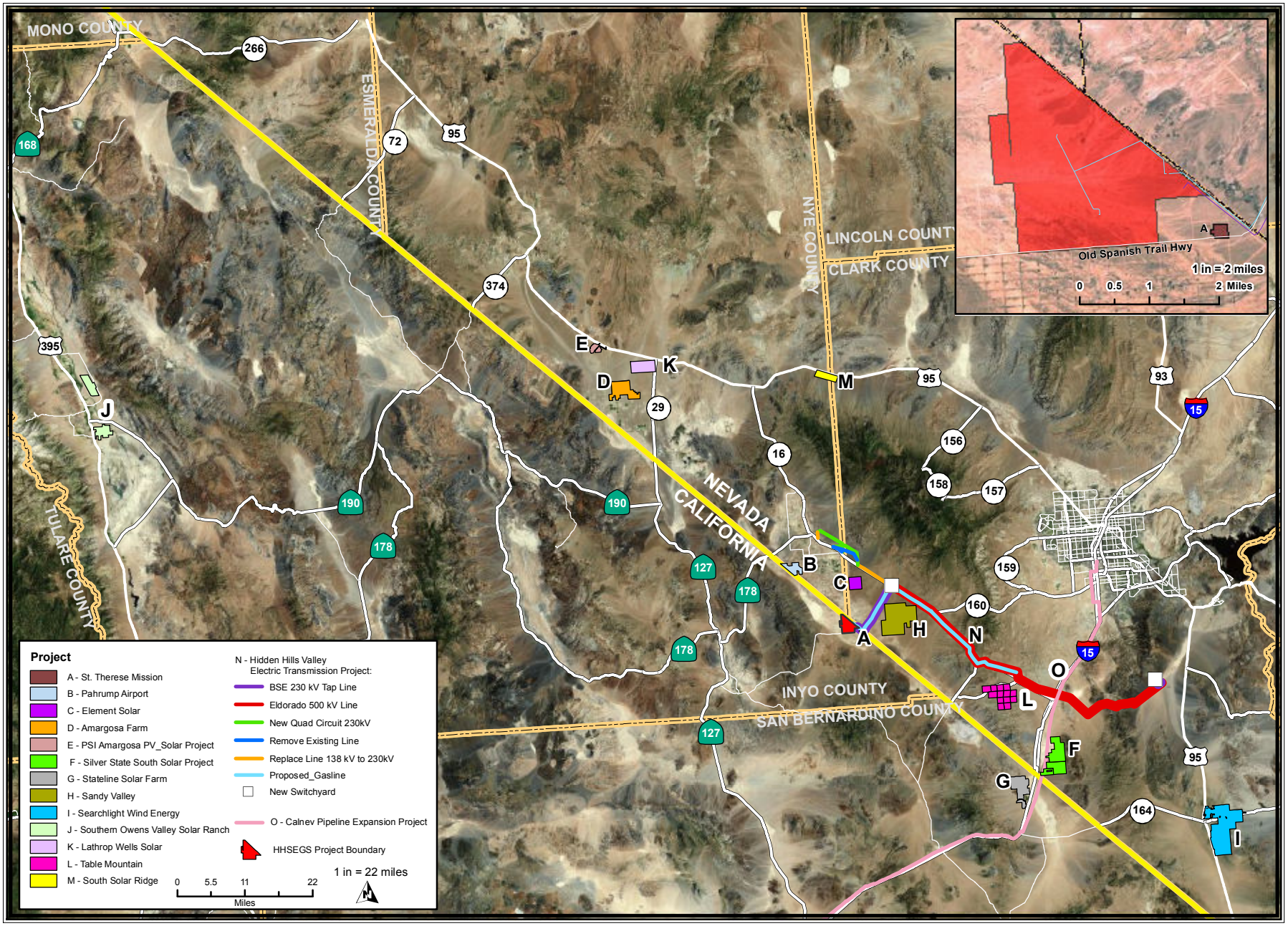
TRAFFIC AND TRANSPORTATION

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Inyo County

TRAFFIC AND TRANSPORTATION - FIGURE 7

Hidden Hills Solar Electric Generating System (HHSEGS) - Master List of Cumulative Projects



CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: BLM Southern Nevada District - Renewable Energy in Southern Nevada, BLM California - Renewable Energy Priority Projects, and Los Angeles Department of Water and Power.

TRAFFIC AND TRANSPORTATION - FIGURE 8

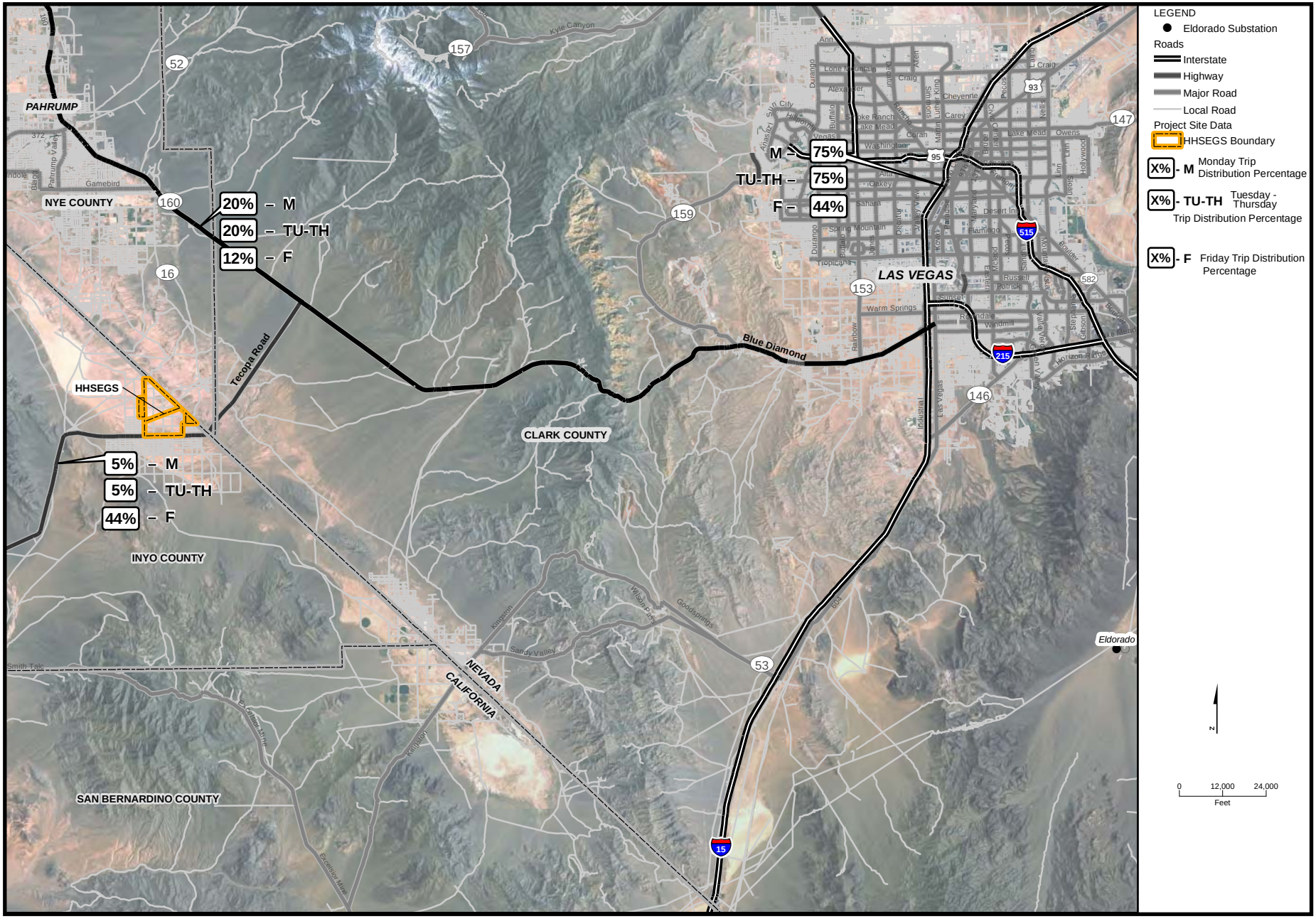
Hidden Hills Solar Electric Generating System (HHSEGS) - State Route 127 Segment Map

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: CA DOT

TRAFFIC AND TRANSPORTATION - FIGURE 9

Hidden Hills Solar Electric Generating System (HHSEGS) - Project Trip Distribution Percentages PM Peak Hour

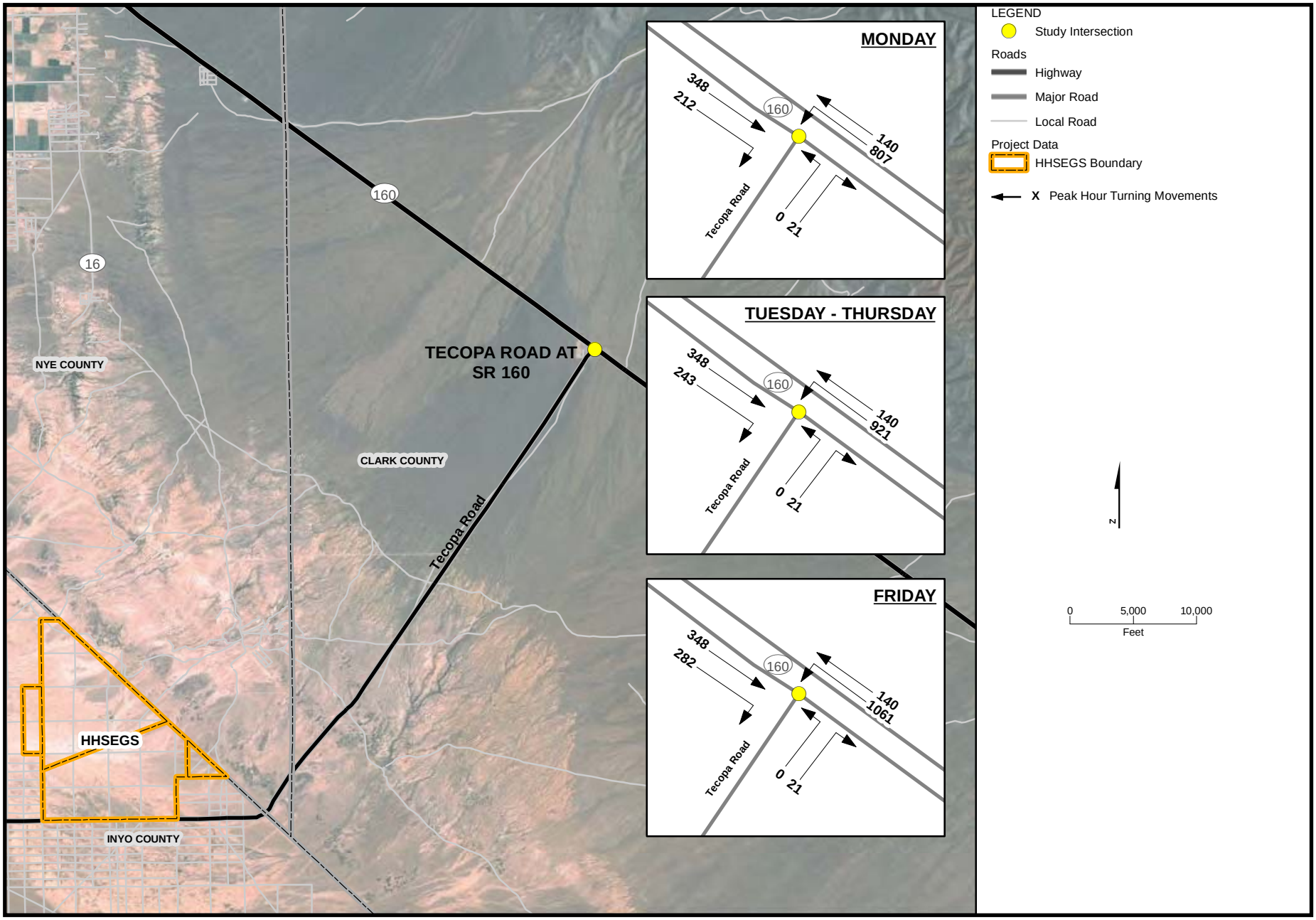


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: 2012-10-01 Updated Workforce Analysis TN-67434 - Fig 5.12-4BR1

TRAFFIC AND TRANSPORTATION - FIGURE 10

Hidden Hills Solar Electric Generating System (HHSEGS) - Existing + Construction Project AM Peak Hour Intersection Volumes



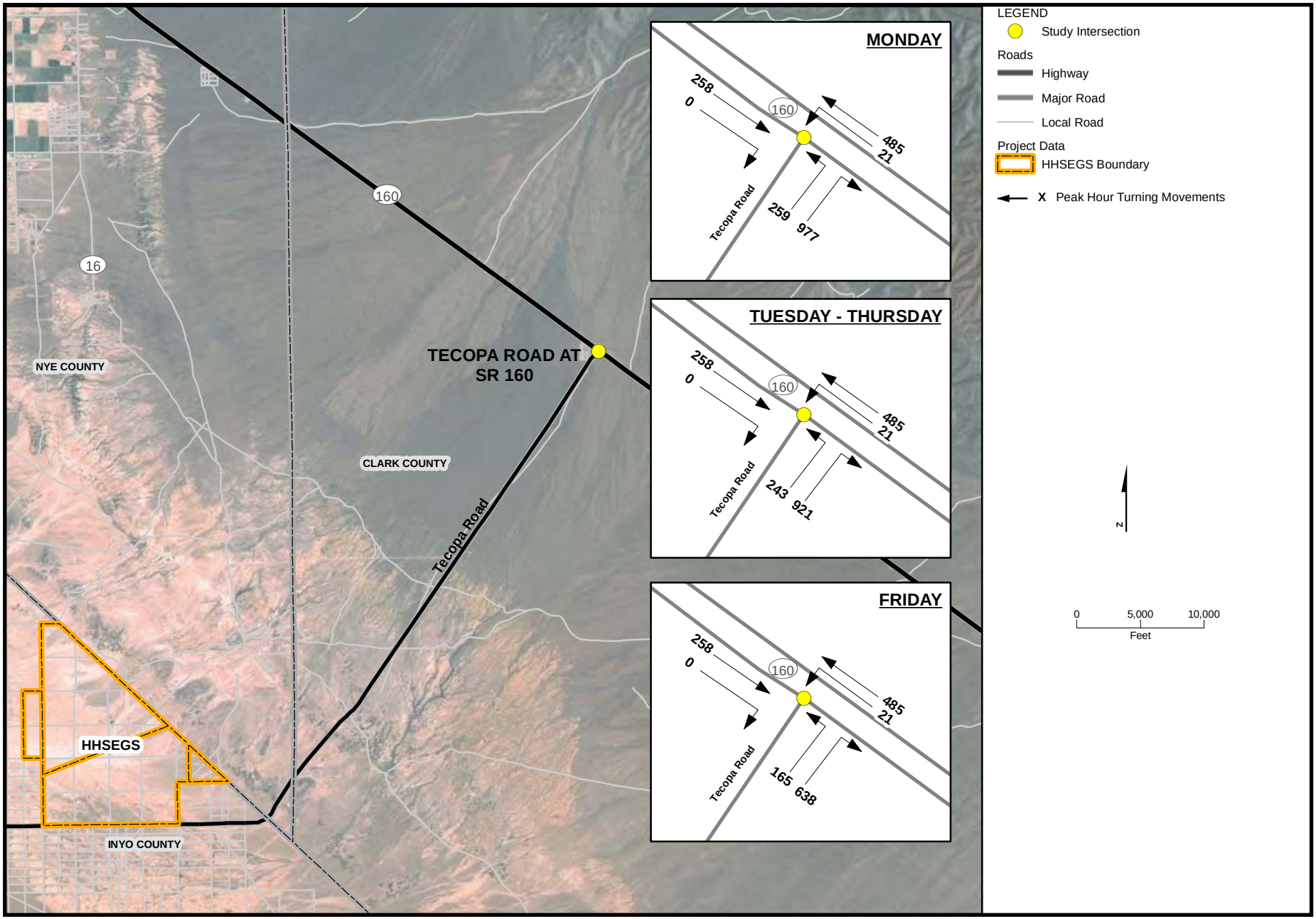
TRAFFIC AND TRANSPORTATION

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: 2012-10-01 Updated Workforce Analysis TN-67434 - Fig 5.12-5R1

TRAFFIC AND TRANSPORTATION - FIGURE 11

Hidden Hills Solar Electric Generating System (HHSEGS) - Existing + Construction Project PM Peak Hour Intersection Volumes



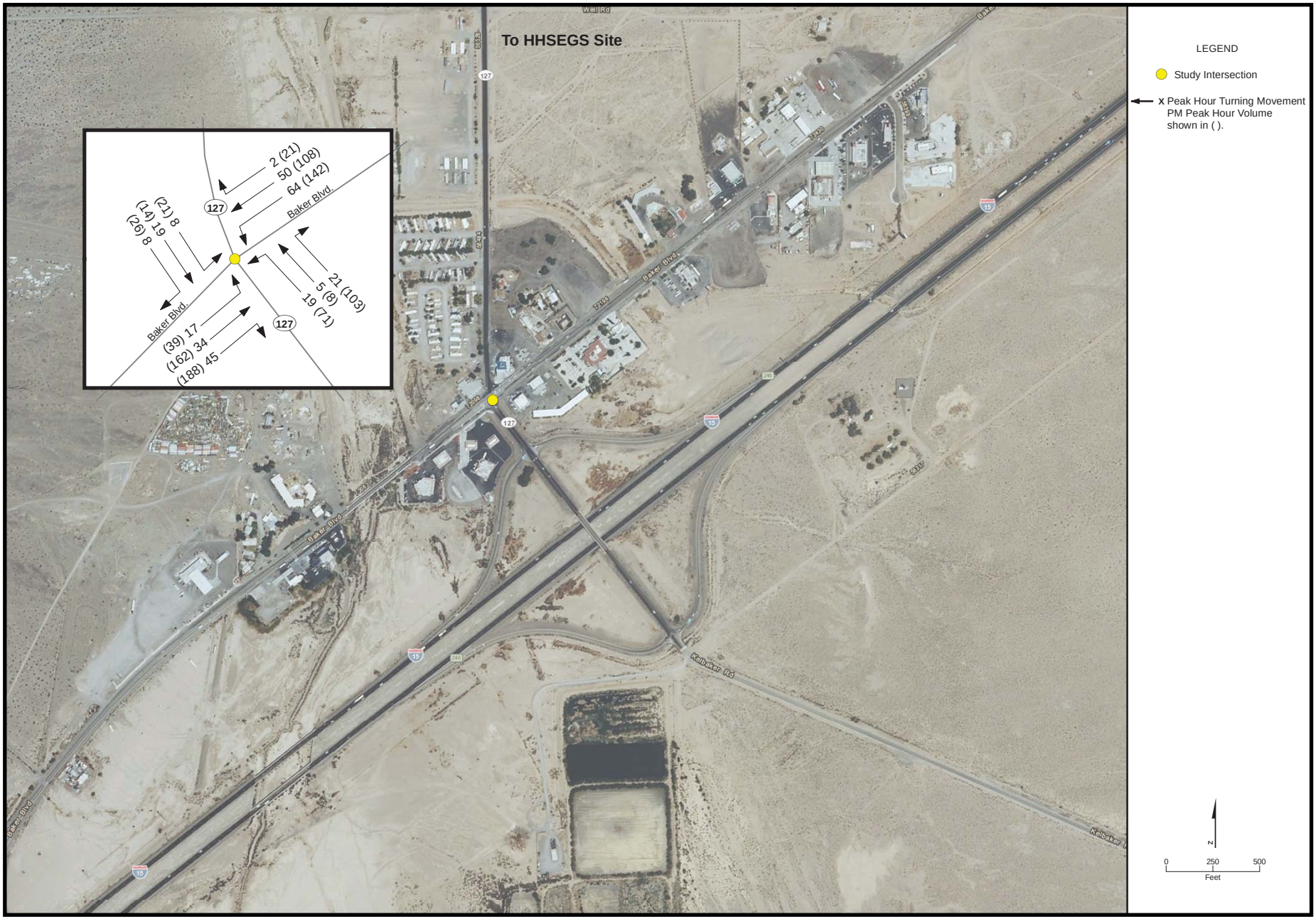
TRAFFIC AND TRANSPORTATION

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: 2012-10-01 Updated Workforce Analysis TN-67434 - Fig 5.12-6R1

TRAFFIC AND TRANSPORTATION - FIGURE 12

Hidden Hills Solar Electric Generating System (HHSEGS) - Existing Peak Hour Intersection Volume

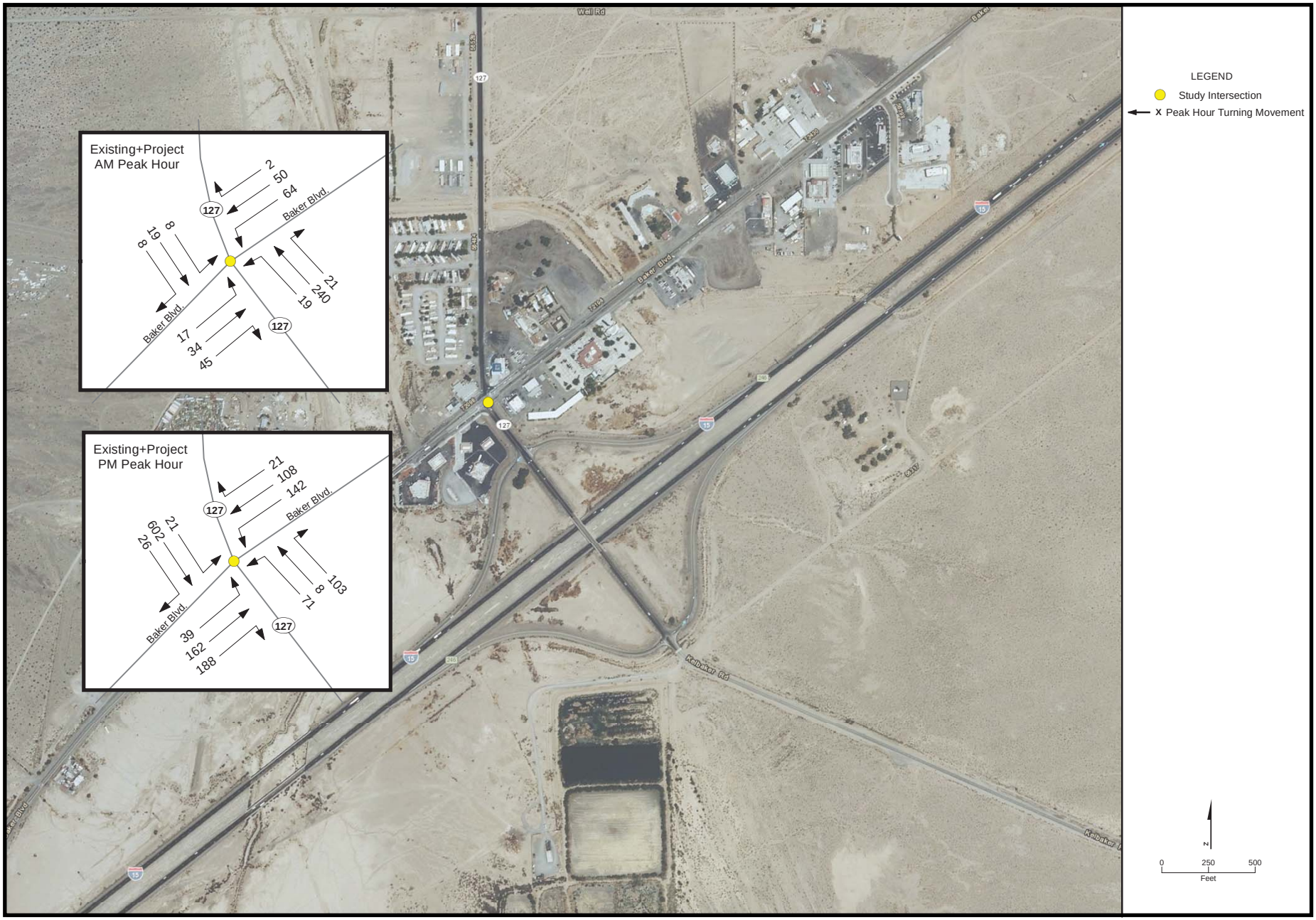


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: CH2M HILL 12/10/12

TRAFFIC AND TRANSPORTATION - FIGURE 13

Hidden Hills Solar Electric Generating System (HHSEGS) - Existing + Project Peak Hour Intersection Volume

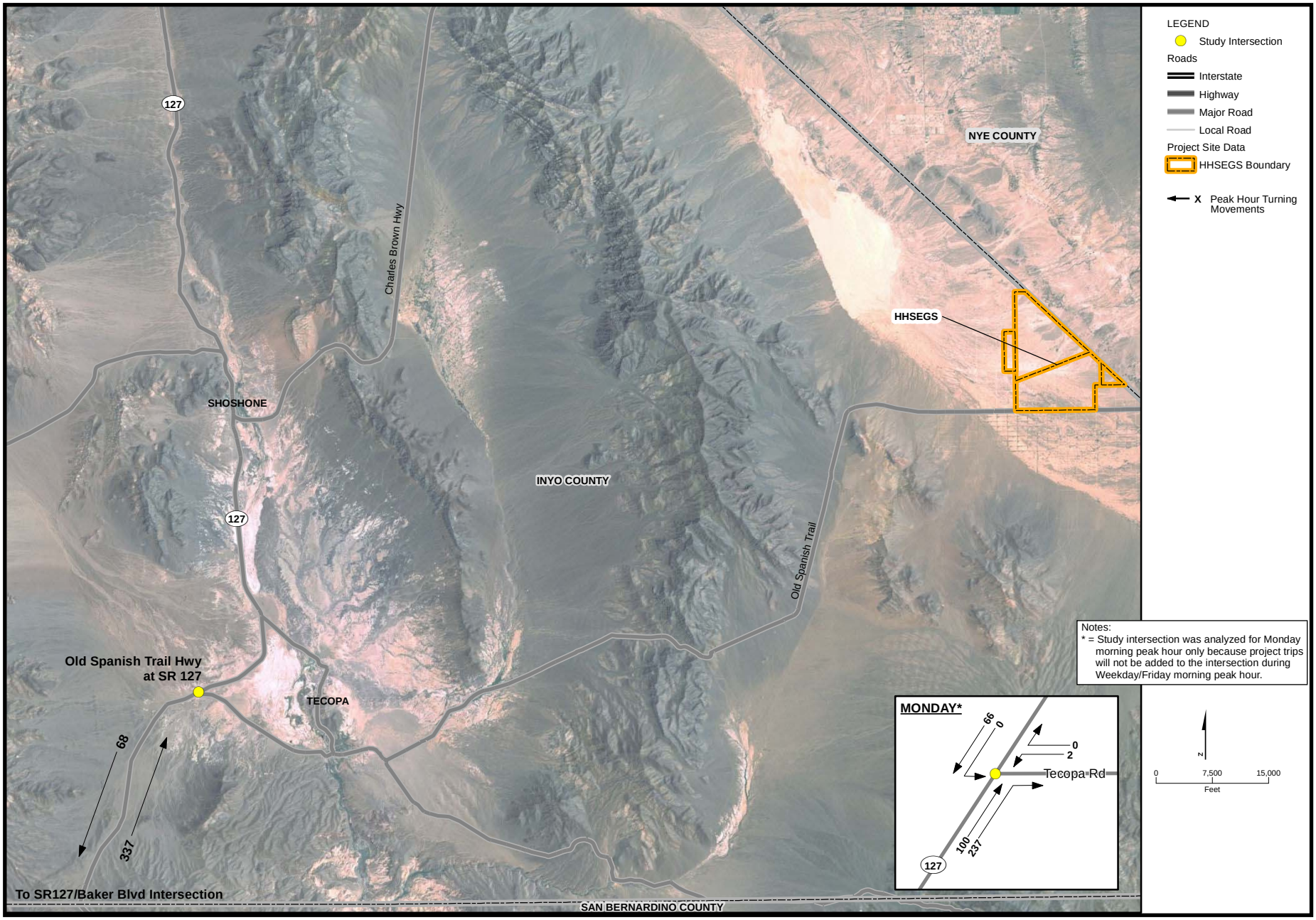


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: CH2MHILL 12/10/12

TRAFFIC AND TRANSPORTATION - FIGURE 14

Hidden Hills Solar Electric Generating System (HHSEGS) - Existing + Construction Project AM Peak Hour Intersection Volume

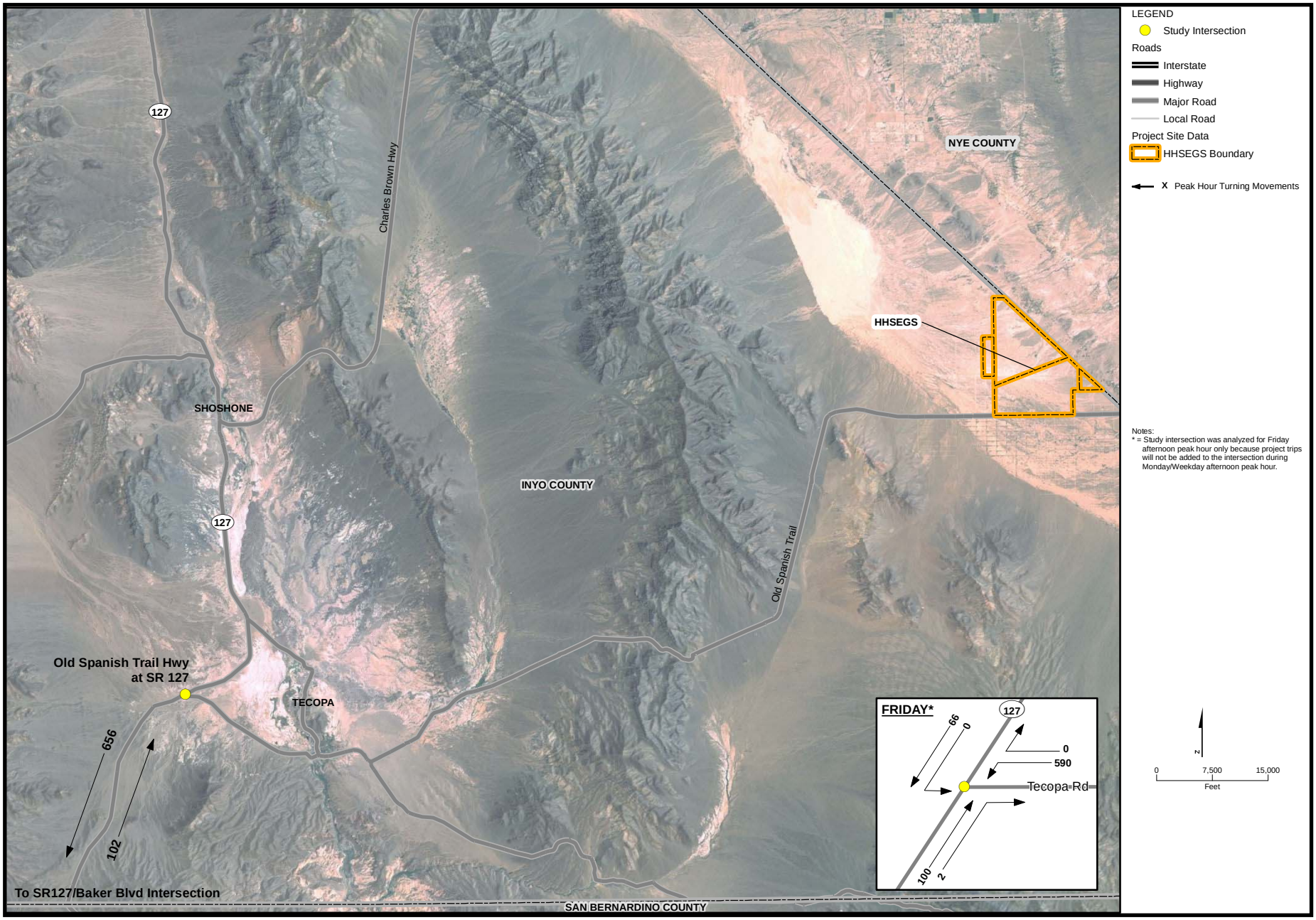


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: CH2MHILL - Figure 5.12-5b Updated Workforce Analysis

TRAFFIC AND TRANSPORTATION - FIGURE 15

Hidden Hills Solar Electric Generating System (HHSEGS) - Existing + Construction Project PM Peak Hour Intersection Volume



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: CH2MHILL - Figure 5.12-6b Updated Workforce Analysis